Pioneer sound.vision.soul

Service Manual

ORDER NO.
RRV2913

DVD/CD TUNER

XV-DV940

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Model	Type	Power Requirement	Region No.	Remarks
XV-DV940	ZUCXJ	DC power is supplied from other system component.	1	

● This service manual should be used together with the following manual(s):

Model	Order No.	Remarks
XV-DV830/ZUCXJ	RRV2817	

- **For SPECIFICATIONS and PANEL FACILITIES, refer to the operating instructions.**
- **This product is a system(s) component.**
  This product does not function properly when it is independent ; to avoid malfunctions, be sure to connect it to the prescribed system component(s), otherwise damage may result. Please connect it to the POWERED SUBWOOFER S-DV940SW , for adujustment and operation inspection.

Component	System	Service Manual	Remarks
DVD/CD TUNER	XV-DV940	RRV2913(RRV2817)	This manual
POWERED SUBWOOFER	S-DV940SW	RRV2912	
SPEAKER SYSTEM	S-DV940ST	RRV2887	

PIONEER CORPORATION 4-1, Meguro 1-chome, Meguro-ku, Tokyo 153-8654, Japan
PIONEER ELECTRONICS (USA) INC. P.O. Box 1760, Long Beach, CA 90801-1760, U.S.A.
PIONEER EUROPE NV Haven 1087, Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE PTE. LTD. 253 Alexandra Road, #04-01, Singapore 159936
©PIONEER CORPORATION 2004

T – ZZV MAR. 2004 Printed in Japan

1. CONTRAST OF MISCELLANEOUS PARTS

NOTES:
- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Screws adjacent to ▼ mark on product are used for disassembly.*
- *Reference Nos. indicate the pages and Nos. in the service manual for the base model.*
- *For the applying amount of lubricants or glue, follow the instructions in this manual. (In the case of no amount instructions, apply as you think it appropriate.)*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560 Ω → 56×10^1 → 561 ..... RD1/4PU 5 6 1 J
47k Ω → 47×10^3 → 473 ..... RD1/4PU 4 7 3 J
0.5 Ω → R50 ..... RN2H R 5 0 K
1 Ω → 1R0 ..... RS1P 1 R 0 K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω → 562×10^1 → 5621 ..... RN1/4PC 5 6 2 1 F

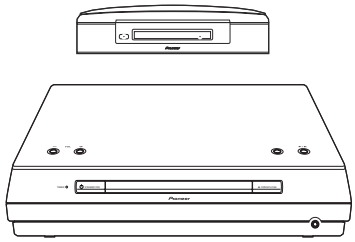
● CONTRAST TABLE

XV-DV940/ZUCXJ and XV-DV830/ZUCXJ are constructed the same except for the following:

Ref. No.	Mark	Symbol and Description	Part No.		Remarks
			XV-DV830/ZUCXJ	XV-DV940/ZUCXJ	
		PACKING			
P9-12		Setup Guide (English, French)	ARE7337	ARE7336	
P9-19		Packing Case	AHD8224	AHD8225	
		EXTERIOR SECTION			
P11-22		Rear Panel	ANC8211	ANC8218	
P11-34		Bottom Base	AMA7030	AMA7031	
P11-35		Top Panel	AMB7850	AMB7890	
P11-39	NSP	Name Label	AAL7338	AAL7339	
P11-40		65 Label	ARW7050	Not used	
P11-44	NSP	Energy Star Label	AAX7876	AAX8022	

Pioneer sound.vision.soul

Service Manual



XV-DV830

ORDER NO.
RRV2817

DVD/CD TUNER

XV-DV830

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Model	Type	Power Requirement	Regional restriction codes (Region No.)	Remarks
XV-DV830	ZUCXJ	DC power supplied from other system component	1	

This product is a system(s) component.
This product does not function properly when independent ; to avoid malfunctions, be sure to connect it to the prescribed system component(s), otherwise damage may result. Please connect it to the POWERED SUBWOOFER S-DV830SW, for adjustment and operation inspection.

Component	System	Service Manual	Remarks
DVD/CD TUNER	XV-DV830	RRV2817	
SPEAKER SYSTEM	S-DV830	RRV2807	This manual
POWERED SUBWOOFER	S-DV830SW		
SPEAKER SYSTEM	S-DV830ST		

For details, refer to "Important symbols for good services" .

PIONEER CORPORATION 4-1, Meguro 1-chome, Meguro-ku, Tokyo 153-8654, Japan
PIONEER ELECTRONICS (USA) INC. P.O. Box 1760, Long Beach, CA 90801-1760, U.S.A.
PIONEER EUROPE NV Haven 1087, Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE PTE. LTD. 253 Alexandra Road, #04-01, Singapore 159936
ⓒ**PIONEER CORPORATION 2003**

T-ZZV JULY 2003 printed in Japan

SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

This product contains lead in solder and certain electrical parts contain chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm.

Health & Safety Code Section 25249.6 – Proposition 65

NOTICE

(FOR CANADIAN MODEL ONLY)

Fuse symbols (fast operating fuse) and/or (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

REMARQUE

(POUR MODÈLE CANADIEN SEULEMENT)

Les symboles de fusible (fusible de type rapide) et/ou (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

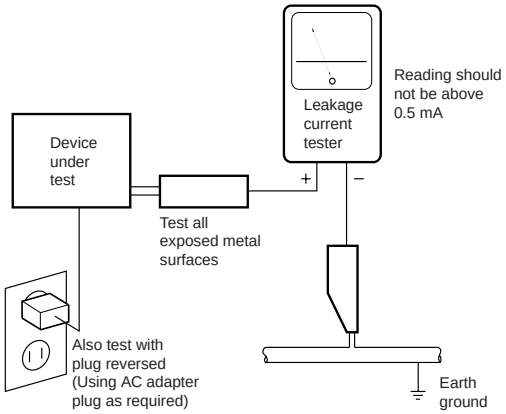
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60 Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5 mA.


Reading should not be above 0.5 mA
Leakage current tester
Device under test
+
–
Test all exposed metal surfaces
Also test with plug reversed (Using AC adapter plug as required)
Earth ground

AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

[Important symbols for good services]
In this manual, the symbols shown-below indicate that adjustments, settings or cleaning should be made securely.
When you find the procedures bearing any of the symbols, be sure to fulfill them:

1. Product safety

You should conform to the regulations governing the product (safety, radio and noise, and other regulations), and should keep the safety during servicing by following the safety instructions described in this manual.

2. Adjustments

To keep the original performances of the product, optimum adjustments or specification confirmation is indispensable. In accordance with the procedures or instructions described in this manual, adjustments should be performed.

3. Cleaning

For optical pickups, tape-deck heads, lenses and mirrors used in projection monitors, and other parts requiring cleaning, proper cleaning should be performed to restore their performances.

4. Shipping mode and shipping screws

To protect the product from damages or failures that may be caused during transit, the shipping mode should be set or the shipping screws should be installed before shipping out in accordance with this manual, if necessary.

5. Lubricants, glues, and replacement parts

Appropriately applying grease or glue can maintain the product performances. But improper lubrication or applying glue may lead to failures or troubles in the product. By following the instructions in this manual, be sure to apply the prescribed grease or glue to proper portions by the appropriate amount.For replacement parts or tools, the prescribed ones should be used.

*** When the FFC cable between the VIDEO ASSY-CN8301 and DVDM ASSY-CN 943 is off from the connector and then the power is turned on, the parts below on the DVDM ASSY may be destroyed.**
Be sure to take care when diagnosing the ASSYS. Refer to P.106.

IC851	DSD1791DBR (AUDIO DAC)
IC861, IC871	DSD1702EG (AUDIO DAC)

CONTENTS

SAFETY INFORMATION 2
1. SPECIFICATIONS 5
2. EXPLODED VIEWS AND PARTS LIST 8
2.1 PACKING 8
2.2 EXTERIOR SECTION 10
2.3 LOADING MECHA ASSY 12
2.4 TRAVERSE MECHA ASSY-S 14
2.5 DISPLAY UNIT 15
3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM 16
3.1 BLOCK DIAGRAM 16
3.2 LOAB ASSY and OVERALL WIRING DIAGRAM 18
3.3 DVDM ASSY(1/4) 20
3.4 DVDM ASSY(2/4) 22
3.5 DVDM ASSY(3/4) 24
3.6 DVDM ASSY(4/4) 26
3.7 VIDEO, DSP TRADE and COMPONENT ASSYS 28
3.8 DSP ASSY(1/2) 30
3.9 DSP ASSY(2/2) 32
3.10 FM/AM TUNER MODULE 34
3.11 TATRADE and CONTROL(1/3) ASSYS 36
3.12 CONTROL(2/3) and HP ASSYS 38
3.13 CONTROL ASSY(3/3) 40
3.14 LCDCONT, CONNECT, KEY RTOP, KEY R, KEY L and KEY LTOP ASSYS 42
3.15 WAVEFORMS 44
4. PCB CONNECTION DIAGRAM 45
4.1 LOAB ASSY 45
4.2 DVDM ASSY 46
4.3 VIDEO, DSP TRADE and COMPONENT ASSYS 48
4.4 DSP ASSY 52
4.5 FM/AM TUNER MODULE 54
4.6 KEY RTOP, KEY R, KEY L and KEY LTOP ASSYS 55
4.7 TXTRADE, CONTROL and HP ASSYS 56
4.8 LCDCONT and CONNECT ASSYS 60
5. PCB PARTS LIST 62
6. ADJUSTMENT 68
6.1 TUNER SECTION 68
6.2 ADJUSTMENT ITEMS AND LOCATION 69
6.3 JIGS AND MEASURING INSTRUMENTS 69
6.4 NECESSARY ADJUSTMENT POINTS 70
6.5 TEST MODE 71
6.6 MECHANISM ADJUSTMENT 72
7. GENERAL INFORMATION 74
7.1 DIAGNOSIS 74
7.1.1 TEST MODE 74
7.1.2 DISPLAY SPECIFICATIONS OF THE TEST MODE 76
7.1.3 FUNCTIONAL SPECIFICATION OF THE SHORTCUT KEY 77
7.1.4 SPECIFICATION OF MODEL INFORMATION 78
7.1.5 FUNCTIONAL SPECIFICATION OF THE SERVICE MODE 79
7.1.6 MECHANICAL ERROR HISTORY 80
7.1.7 ID NUMBER AND DATA SETTING 85
7.1.8 TROUBLE SHOOTING 88
7.1.9 DSP TROUBLE SHOOTING 91
7.1.10 SEQUENCE AFTER POWER ON 95
7.1.11 SINGLE OPERATION METHOD 100
7.1.12 PROTECTION CIRCUIT 101
7.1.13 DISASSEMBLY 105
7.2 IC 114
7.3 DISC/CONTENT FORMAT 137
7.4 CLEANING 139
8. PANEL FACILITIES 140

1. SPECIFICATIONS

Amplifier Section

Continuous Power (RMS). . . . . 75 W / channel
. . . . . (1 kHz, THD 10%, 6Ω)

Disc section

Digital audio
characteristics . . . . . DVD fs: 96 kHz, 24-bit
Type. . . . . DVD system, Video CD system and
Compact Disc digital audio system
Frequency response
48 kHz sampling. . . . . 4 Hz – 22 kHz
96 kHz sampling. . . . . 4 Hz – 44 kHz
192 kHz sampling. . . . . 4 Hz – 88 kHz
S/N ratio 108dB
Dynamic range 95dB
Total harmonic distortion . . . . . 0.005 %
Wow and Flutter. . . . . Limit of measurement
(±0.001 % W.PEAK) or less (JEITA)

FM tuner section

Frequency Range . . . . . 87.5 - 108MHz
Antenna . . . . . 75Ω, unbalanced

AM tuner section

Frequency Range
With 9kHz step . . . . . 531 kHz to 1,602 kHz
With 10kHz step . . . . . 530 kHz to 1,700 kHz
Antenna . . . . . Loop antenna

Miscellaneous

Power Requirements . . . . . AC 120V, 60 Hz
Power Consumption . . . . . 178 W
Power Consumption
in standby mode . . . . . 0.48 W
Dimensions:
DVD/CD Tuner. . 360 (W) x 74 (H) x 270 (D) mm
$14\ 3/16$ (W) x $2\ 29/32$ (H) x $10\ 5/8$ (D) in.
Display Unit . . . . 274 (W) x 44 (H) x 35 (D) mm
$10\ 25/32$ (W) x $1\ 23/32$ (H) x $1\ 3/8$ (D) in.
Weight:
DVD/CD Tuner. . . . . 3.2 kg / 7 lb
Display Unit . . . . . 0.2 kg / 7 oz

Accessories

Operating Instructions 1
Setup guide. 1
Display unit 1
Remote control unit 1
Power cord 1
Video Cord (yellow plugs). 1
Display cable (gray plugs). 1
Control cable A (blue plugs) 1
Control cable B (black plugs) 1
FM antenna 1
AM loop antenna 1
Dry cell batteries (AA/R6) 2
Speaker cords (5 m). 3
Speaker cords (10 m). 2
Non-skid pads (center speaker). 3
Non-skid pads (subwoofer). 4
Speaker stands. 4
Warranty Card. 1

Satellite Speaker System (S-DV830ST)

Type Sealed, antimagnetic
Speaker . . . . . 8.7 cm (cone type)
. . . . . 5.2 cm (cone type)
Nominal impedence. 6Ω
Frequency range. . . . . 80 – 20,000 Hz
Max. input . . . . . 75 W (JEITA)
Front / Surround speakers
Dimensions . . . . . 110 (W) x 59 (D) x 284 (H) cm
$4^{11/32}$ (W) x $2\ 5/16$ (H) x $10^{3/16}$ (D) in.
Weight . . . . . 0.7 kg
Center speaker
Dimensions . . . . . 284 (W) x 58 (D) x 110 (H) cm
$11^{3/16}$ (W) x $2\ 9/32$ (H) x $11^{3/16}$ (D) in.
Weight . . . . . 0.7 kg /1 lb. 9 oz

Powered subwoofer (S-DV830SW)

Type. . . . . Bass reflex floor type, antimagnetic
Speaker . . . . . 18 cm (cone type)
Nominal impedence. 6Ω
Frequency range. . . . . 28 – 250 Hz
Max. input . . . . . 75 W (JEITA)
Dimensions . . . . 192 (W) x 436 (D) x 395 (H) cm
$7\ 9/16$ (W) x $17\ 5/32$ (H) x $15^{9/16}$ (D) in.
Weight . . . . . 12.5 kg / 27 lb. 9 0z

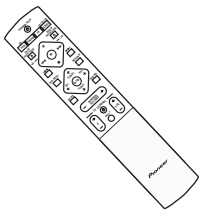
Note

- Specifications and design subject to possible modification without notice, due to improvements.

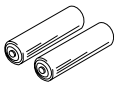
This product includes FontAvenue® fonts licenced by NEC corporation. FontAvenue is a registered trademark of NEC Corporation.

accessories

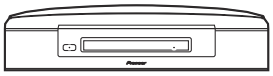
Remote control unit (XXD3058)



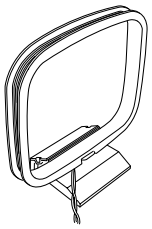
Dry cell batteries (sizeAA/R6P) x2



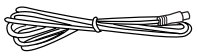
Display unit (AXX7163)



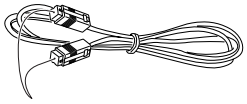
AM loop antenna (ATB7009)



FM antenna (ADH7004)



Control cable A (ADE7063) L=3m

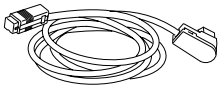


Blue plugs

Control cable B (ADE7078) L=3m

Black plugs

Display cable (ADE7077) L=1.5m

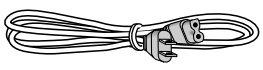


Gray plugs

Video cord (VDE1065)

Yellow plugs

- Power cord (ADG7021)



A

B

C

D

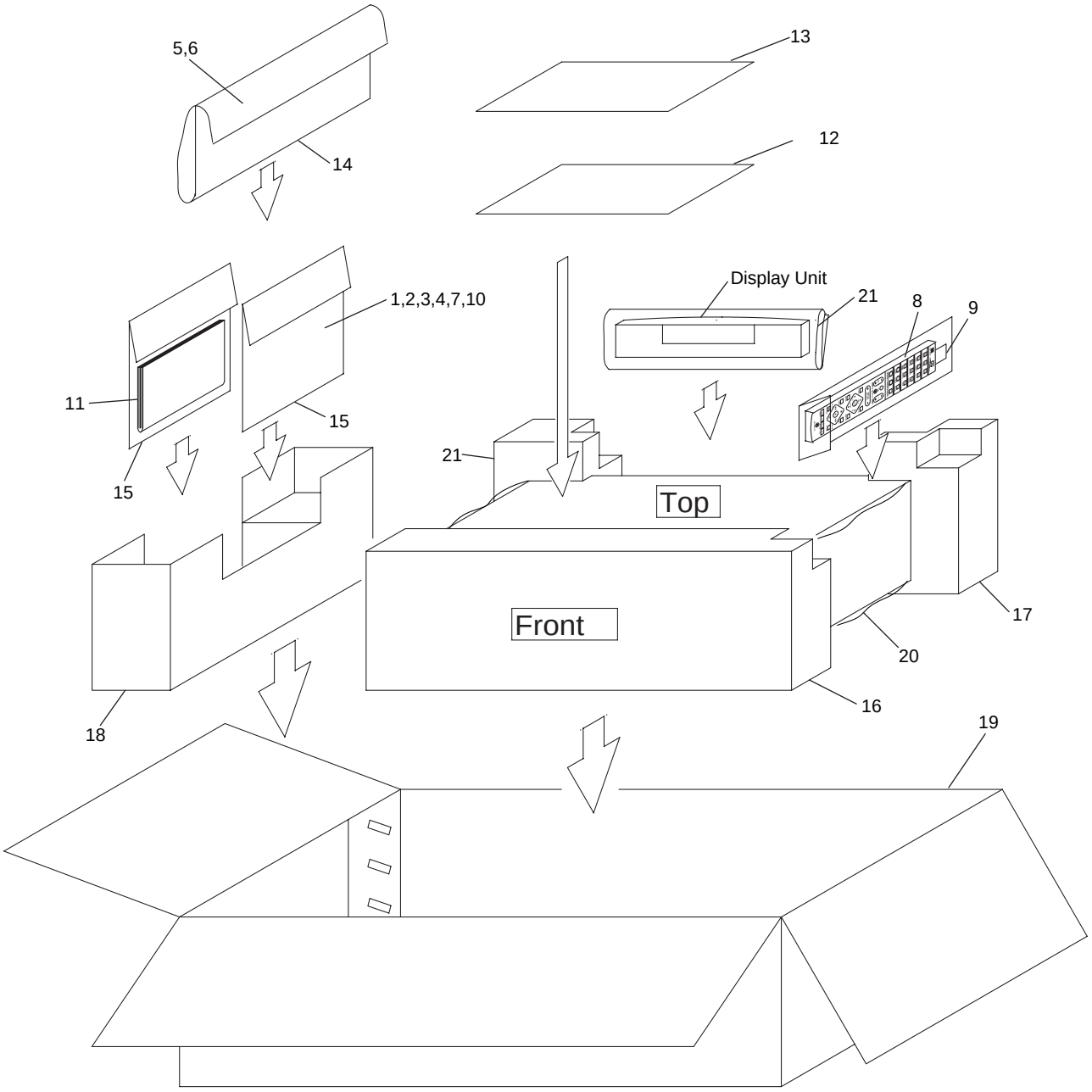
E

F

2. EXPLODED VIEWS AND PARTS LIST

NOTES:
- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Screws adjacent to ▼ mark on product are used for disassembly.*
- *For the applying amount of lubricants or glue, follow the instructions in this manual. (In the case of no amount instructions, apply as you think it appropriate.)*

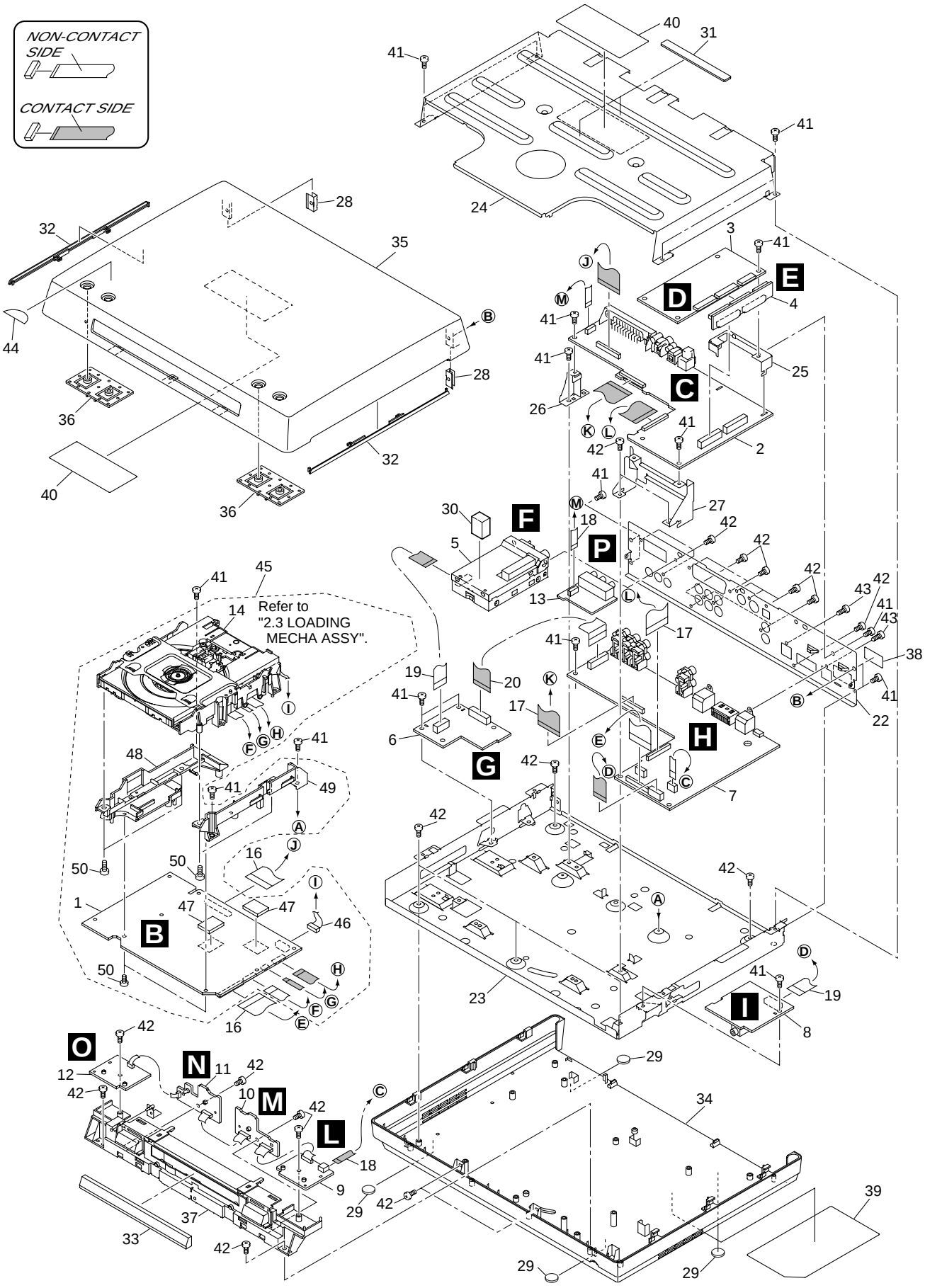
2.1 PACKING



PACKING parts List

Mark	No.	Description	Part No.
⚠	1	Power Cord	ADG7021
	2	FM Antenna	ADH7004
	3	AM Loop Antenna	ATB7009
	4	Video Cord	VDE1065
	5	Control Cable A (Blue Pugs)	ADE7063
	6	Control Cable B (Black Plugs)	ADE7078
	7	Display Cable (Gray Plugs)	ADE7077
	8	Remote Control Unit	XXD3058
	9	Battery Cover	XZN3130
NSP	10	Dry Cell Batteries (R6P,AA)	VEM1031
	11	Operating Instructions (English, French)	ARE7335
	12	Setup Guide (English, French)	ARE7337
NSP	13	Warranty Card	ARY7045
NSP	14	Polyethylene Bag	AHG7098
NSP	15	Polyethylene Bag	Z21-038
	16	Front Pad	AHA7420
	17	Rear Pad	AHA7421
	18	Spacer	AHB7087
	19	Packing Case	AHD8224
	20	Packing Sheet	AHG7015
	21	Protection Bag	AHG7109

2.2 EXTERIOR SECTION



EXTERIOR SECTION parts List

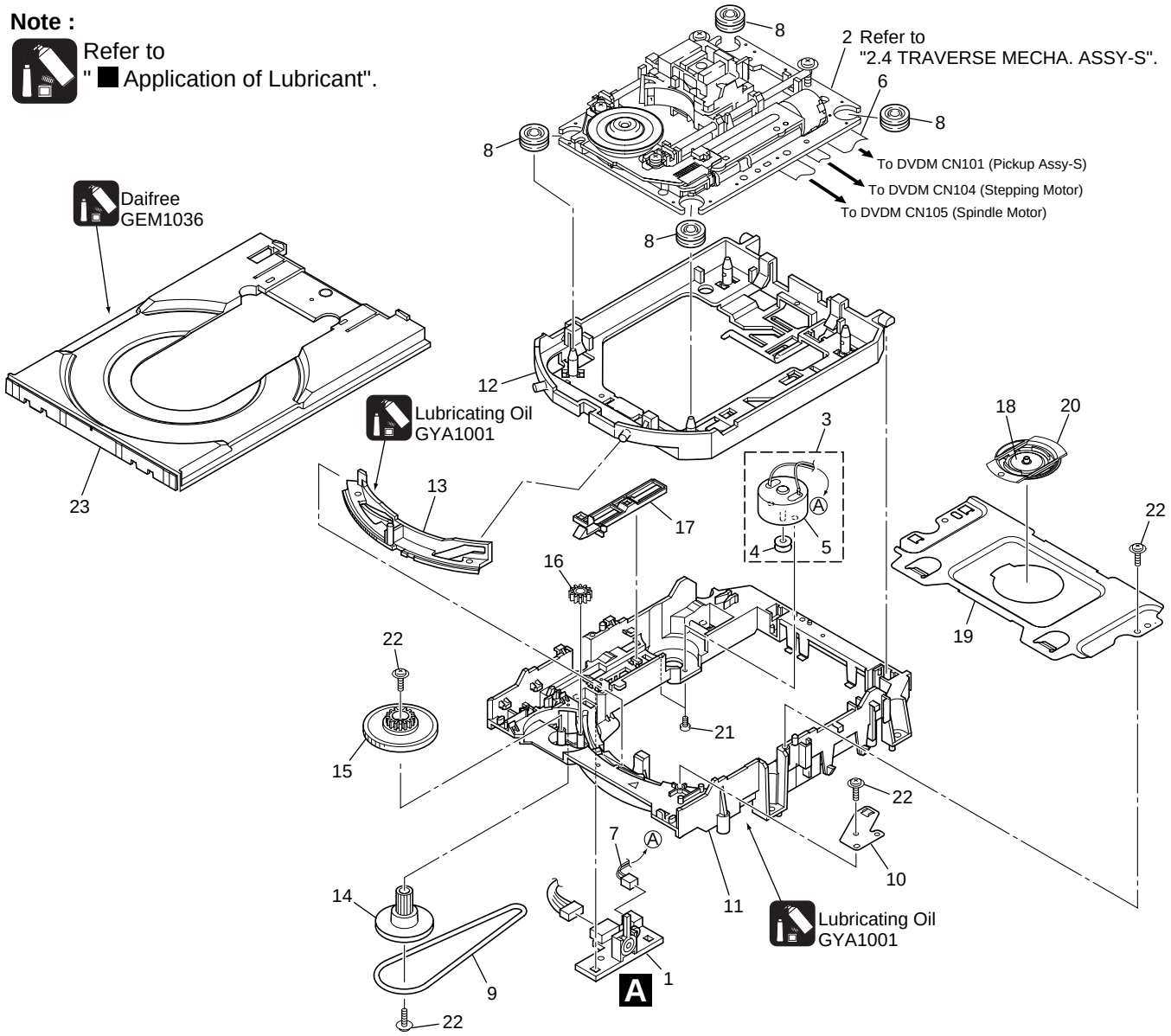
Mark	No.	Description	Part No.
	1	DVDM Assy	AWM7813
	2	VIDEO Assy	AWU8104
	3	DSP Assy	AWX8325
	4	DSP TRADE Assy	AWU8101
	5	FM/AM TUNER Module	AXQ7228
	6	TX TRADE Assy	AWU8115
	7	CONTROL Assy	AWU8103
	8	HP Assy	AWU8102
	9	KEY R TOP Assy	AWU8113
	10	KEY R Assy	AWU8112
	11	KEY L Assy	AWU8110
	12	KEY L TOP Assy	AWU8111
	13	COMPONENT Assy	AWU8116
NSP	14	LOADING MECHA Assy	VWT1208
	15	• • • • • •	
	16	30P FFC/30V	ADD7436
	17	30P FFC/30V	ADD7437
	18	5P FFC/30V	ADD7438
	19	13P FFC/30V	ADD7439
	20	19P FFC/30V	ADD7440
	21	• • • • • •	
	22	Rear Panel	ANC8211
NSP	23	Bottom Plate	ANF7035
NSP	24	Top Plate	ANF7036
	25	Angle DSP	ANG7467
	26	Angle PCB S	ANG7468
	27	Angle PCB M	ANG7475
	28	Screw Plate	ANG7470
	29	Leg	AEB7090
	30	Tuner Spacer	AEB7320
	31	Top Spacer	AEB7321
	32	Side Plate	AAK8135
	33	Tray Panel	AAN7223
	34	Bottom Base ZUC	AMA7030
	35	Top Panel	AMB7850
	36	Button Assy T	AXG7205
	37	Button Assy F	AXG7206
NSP	38	ID Label Assy	VXW1003
NSP	39	Name Label R	AAL7338
	40	65 Label	ARW7050
	41	Screw	BBZ30P080FMC
	42	Screw	BPZ30P080FZK
	43	Screw	PSC30P080FNI
NSP	44	Energy Star Label	AAX7876

Mark	No.	Description	Part No.
NSP	45	DVD Assy	AXA7126
	46	Connector Assy	PG05KK-E25
	47	Cushion	AEB7267
	48	Adapter02 L	ANW7267
	49	Adapter02 R	ANW7268
	50	Screw	BPZ30P080FMC

2.3 LOADING MECHA ASSY

Note :

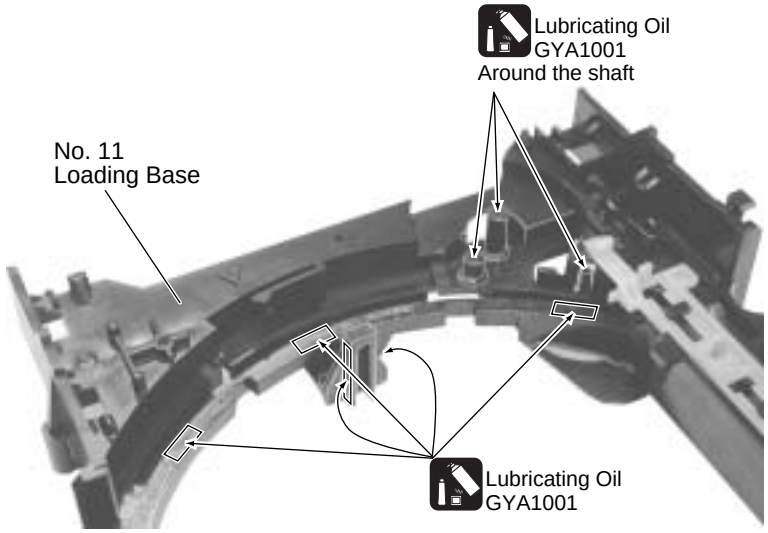
Refer to
" ■ Application of Lubricant".

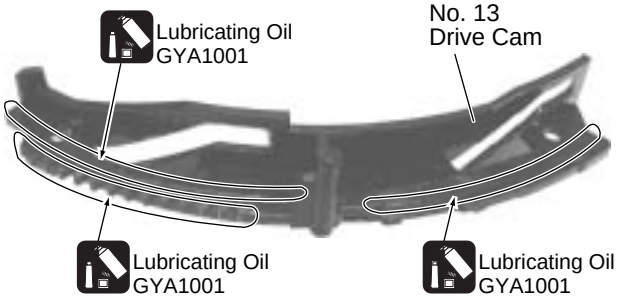


LOADING MECHA ASSY parts List

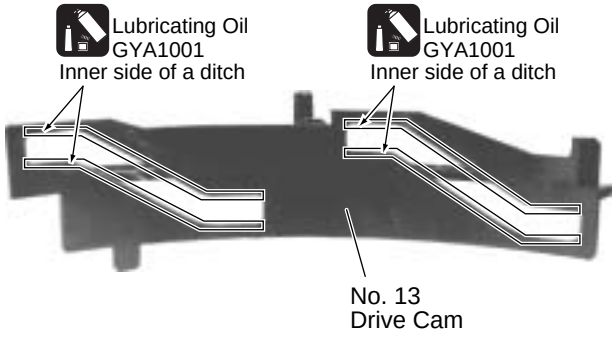
Mark	No.	Description	Part No.
NSP	1	LOAB Assy	VWG2346
	2	Traverse Mechanism Assy-S	VXX2871
	3	Loading Motor Assy	VXX2872
	4	Motor Pulley	PNW1634
	5	Motor	VXM1105
	6	Flexible Cable (24P)	VDA1947
	7	Connector Assy 2P	VKP2253
	8	Floating Rubber	VEB1351
	9	Belt	VEB1330
	10	Stabilizer	VNE2253
	11	Loading Base	VNL1917
	12	Float Base DVD	VNL1918
	13	Drive Cam	VNL1919
	14	Gear Pulley	VNL1921
	15	Loading Gear	VNL1922
	16	Drive Gear	VNL1923
	17	SW Lever	VNL1925
	18	Clamper Plate	VNE2251
	19	Bridge	VNE2252
	20	Clamper	VNL1924
	21	Screw	JGZ17P028FMC
	22	Screw	Z39-019
	23	Tray	VNL1920

Application of Lubricant

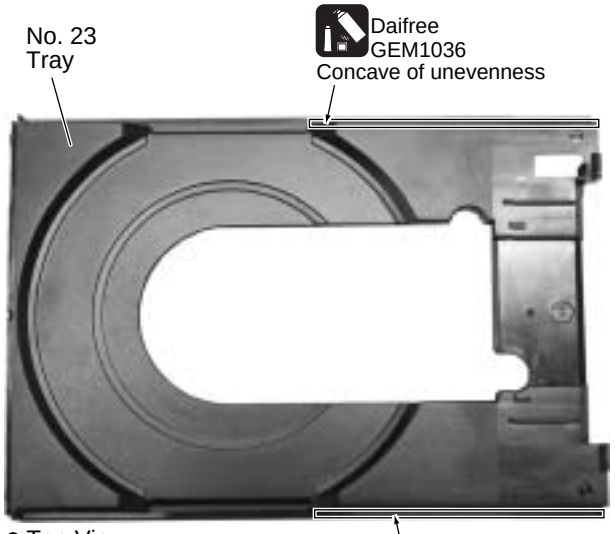




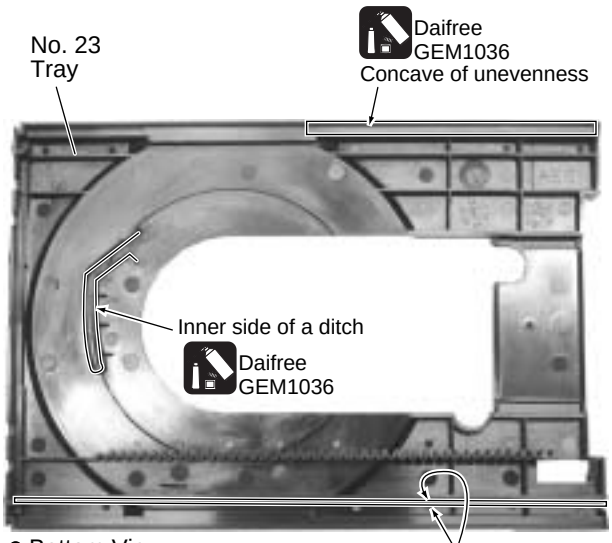
● Front View



● Rear View

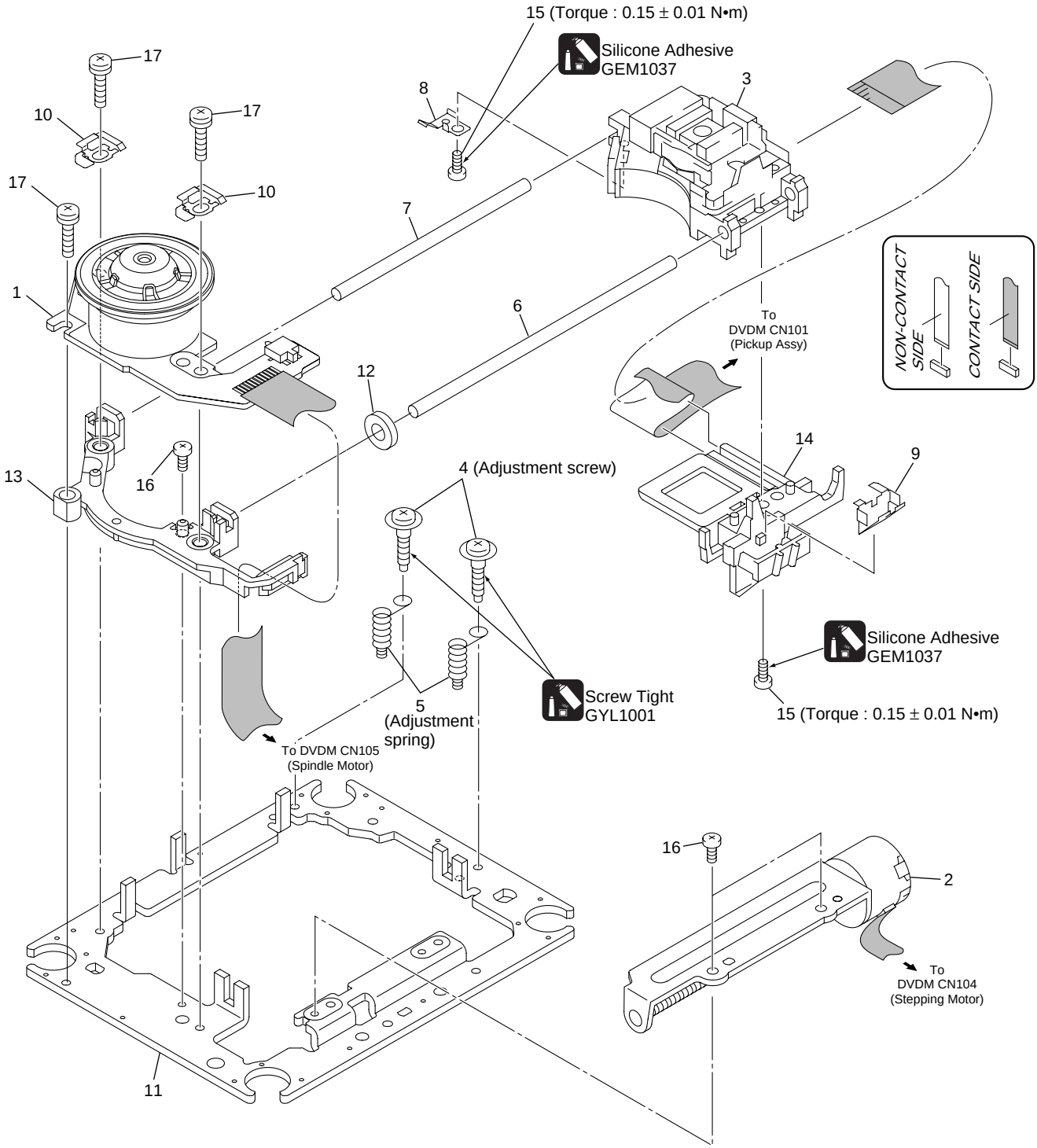


● Top View



● Bottom View

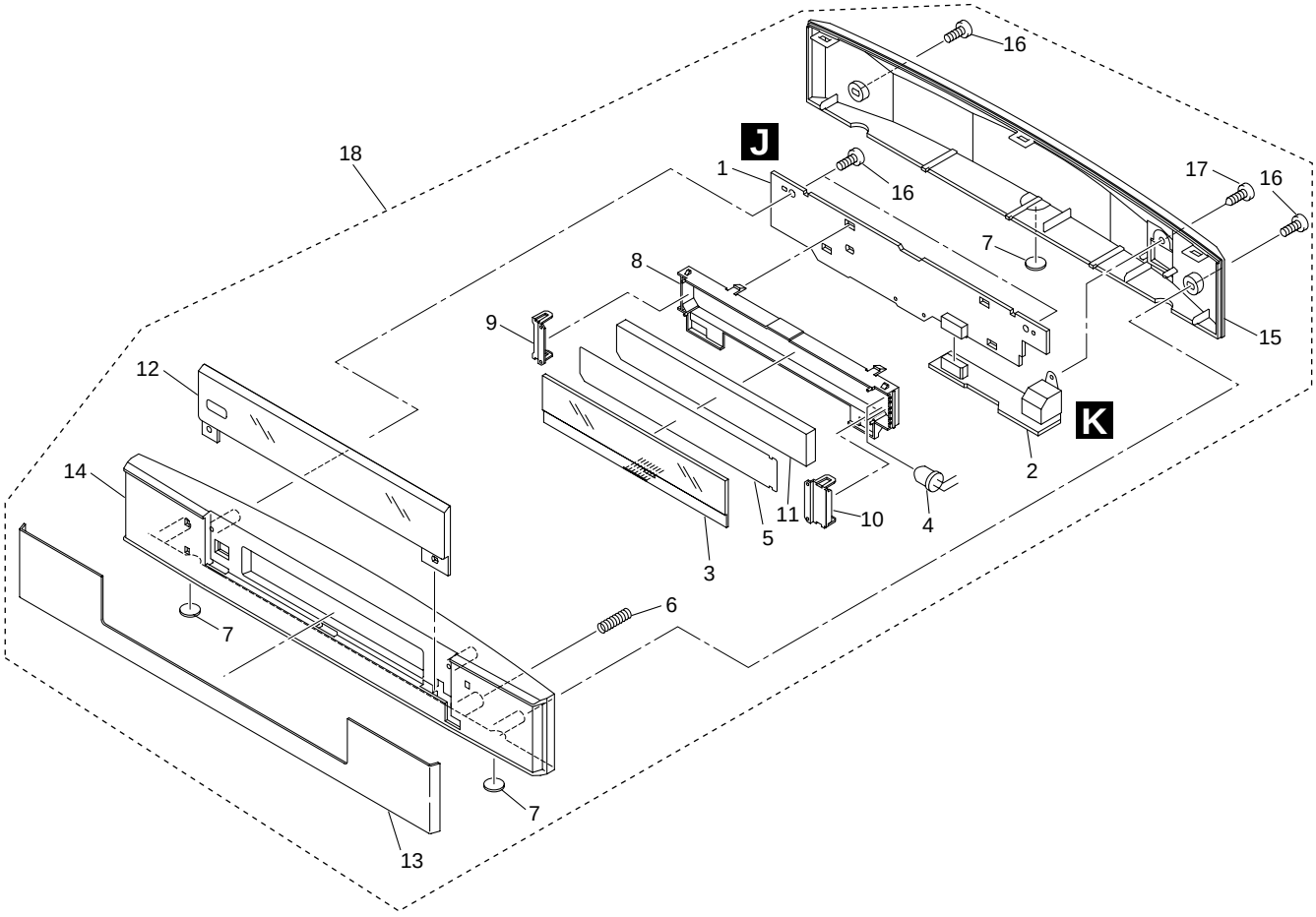
2.4 TRAVERSE MECHA ASSY-S



TRAVERSE MECHA ASSY-S parts List

Mark	No.	Description	Part No.
	1	Spindle Motor	VXM1099
	2	Stepping Motor	VXM1101
⚠	3	Pickup Assy-S	OXX8005
	4	Skew Screw	VBA1080
	5	Skew Spring	VBH1335
	6	Guide Bar	VLL1514
	7	Sub Guide Bar	VLL1515
	8	Leaf Spring	VNC1023
	9	Joint Spring	VNC1019
	10	Support Spring	VNC1020
NSP	11	Mechanism Chassis	VNE2248
	12	Damper Sheet	VEB1335
	13	Spacer	VNL1913
	14	Joint 03	VNL1949
	15	Tapping Screw	OBA8021
	16	Screw	BBZ20P050FZK
	17	Screw	PMA26P100FMC

2.5 DISPLAY UNIT

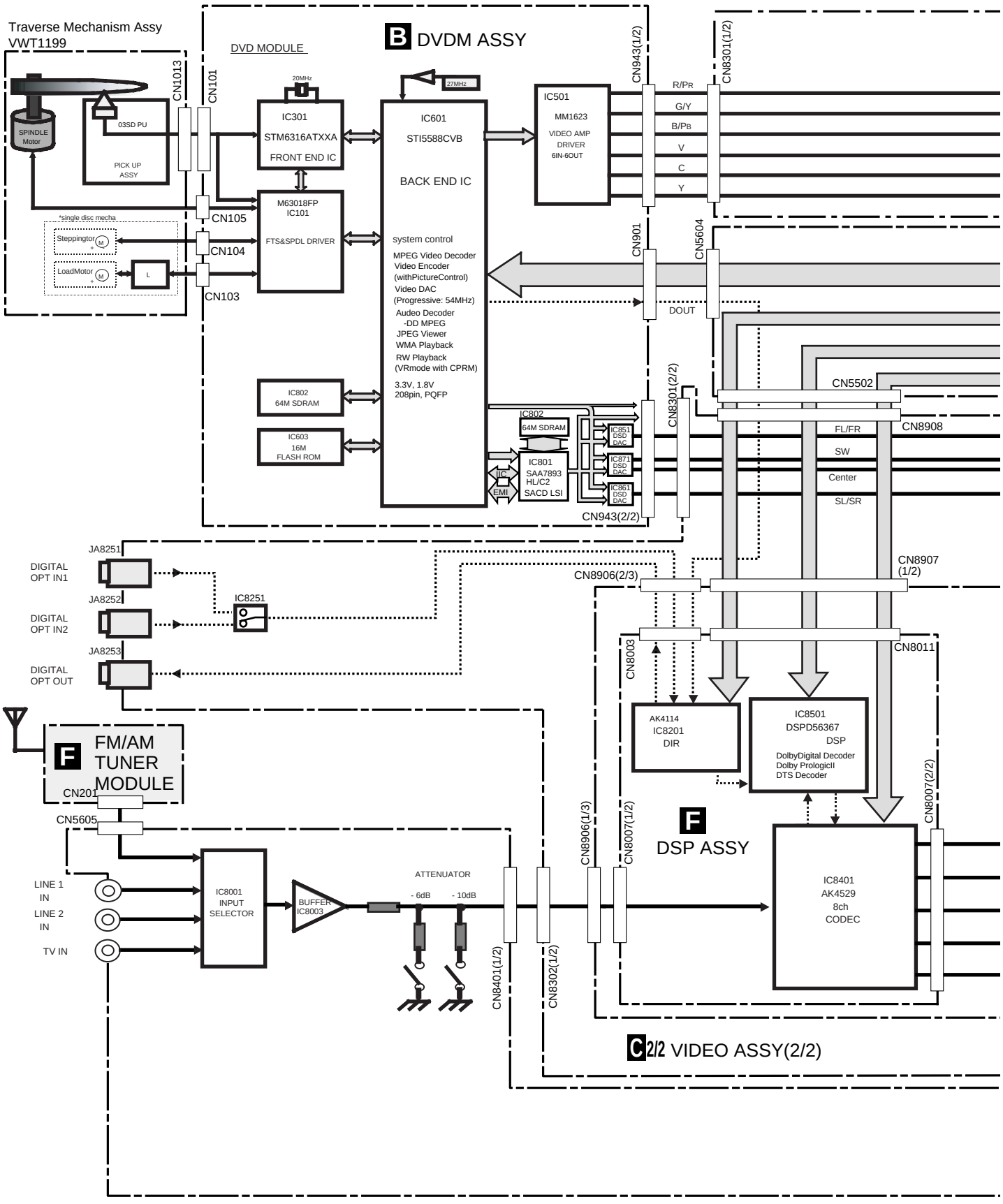


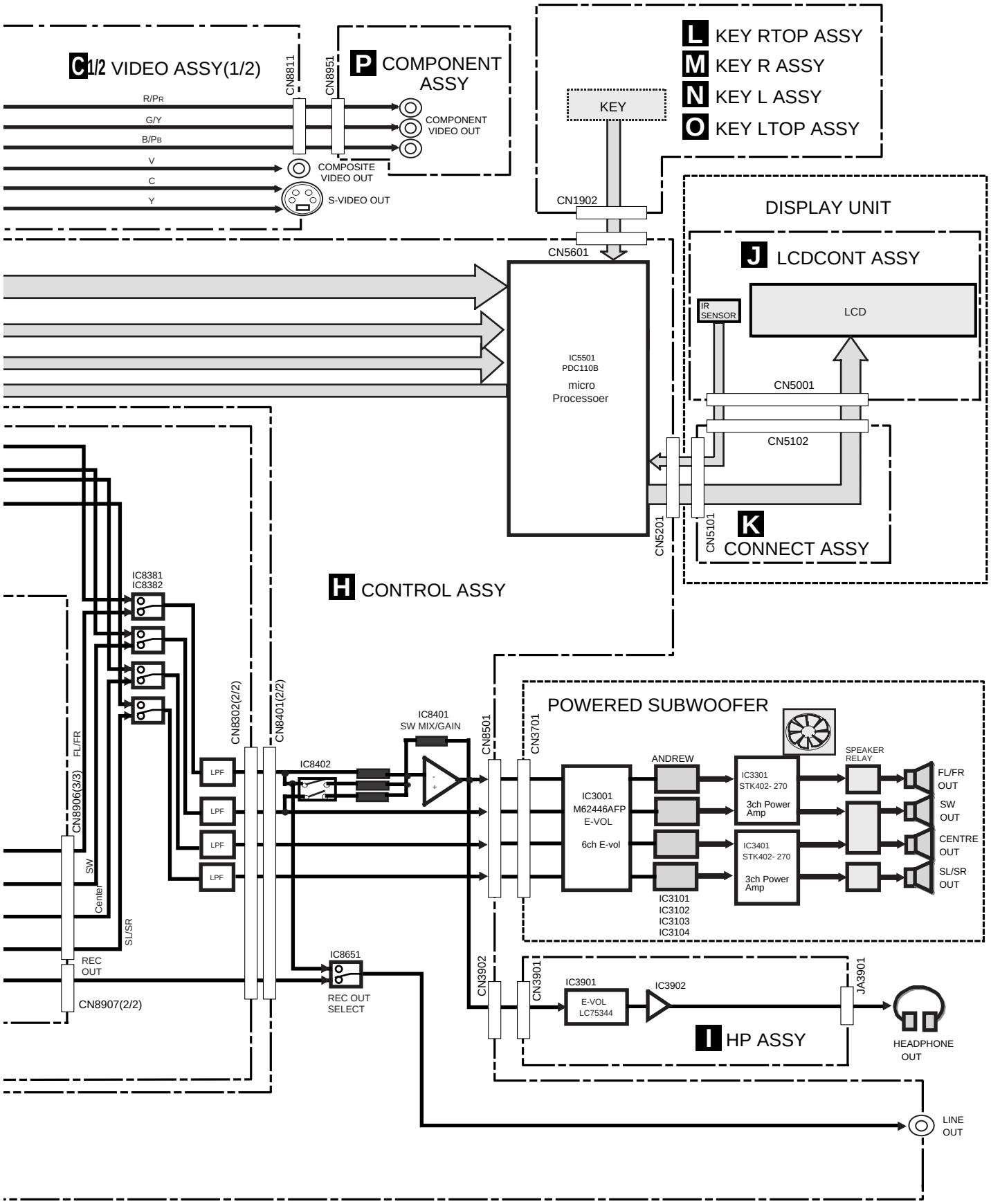
DISPLAY UNIT parts List

Mark	No.	Description	Part No.
	1	LCD CONT Assy	AWU8119
	2	CONNECT Assy	AWU8118
	3	LCD	AAV7098
	4	LED (White)	NSPW510BS-1064
	5	Diffusion Sheet	AAK8144
	6	Earth Spring	ABH7233
	7	Leg	AEB7090
	8	Back Light Case	AMR7463
	9	REF Plate A	AMR7464
	10	REF Plate B	AMR7465
	11	Optical Plate	AMR7466
	12	Display Window	AAK8137
	13	Display AL	AAP7094
	14	Display Panel	AMB7851
	15	Display Cover	AMC7051
	16	Screw	BPZ30P080FZK
	17	Screw	PSC30P080FNI
	18	Display Unit	AXX7163

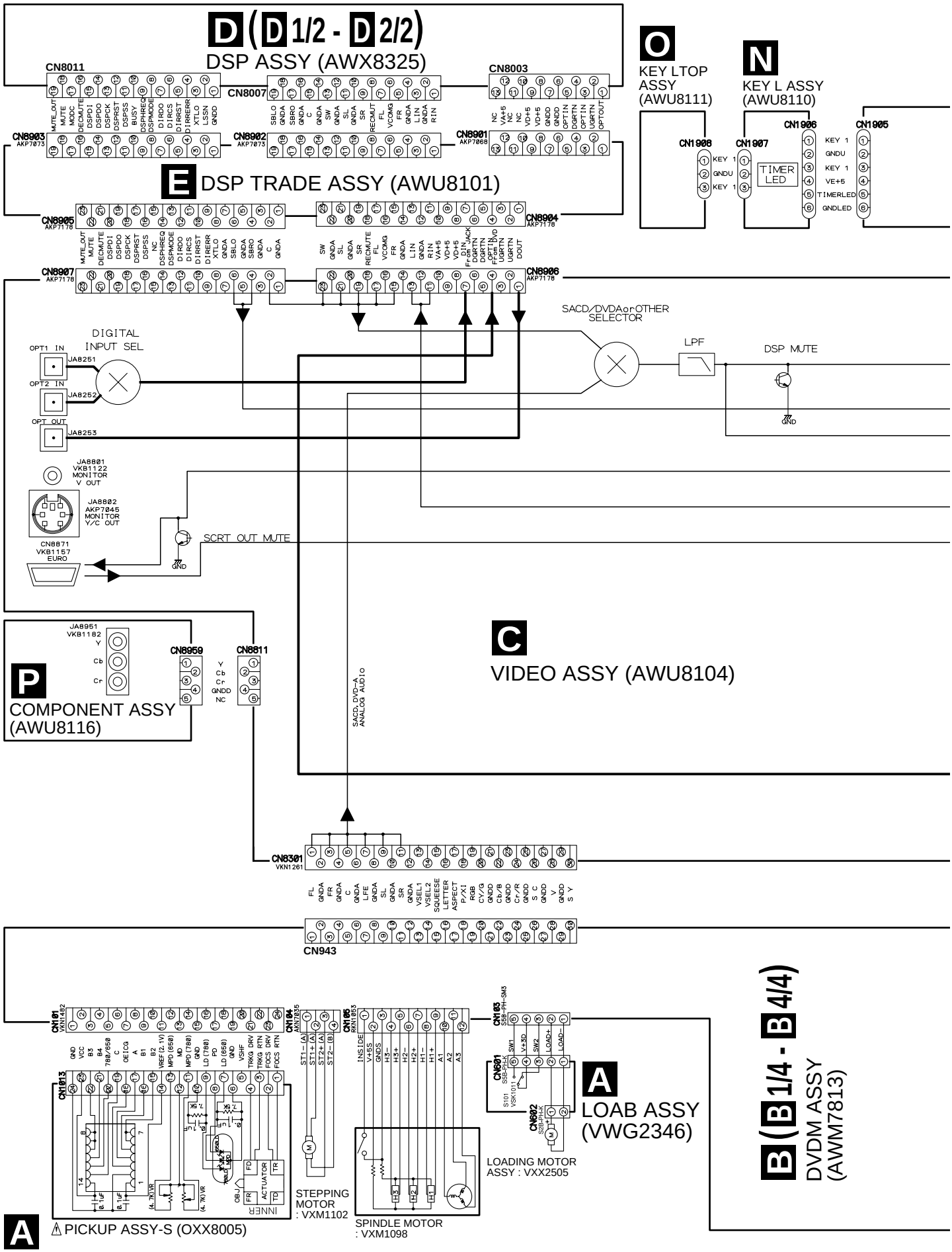
3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

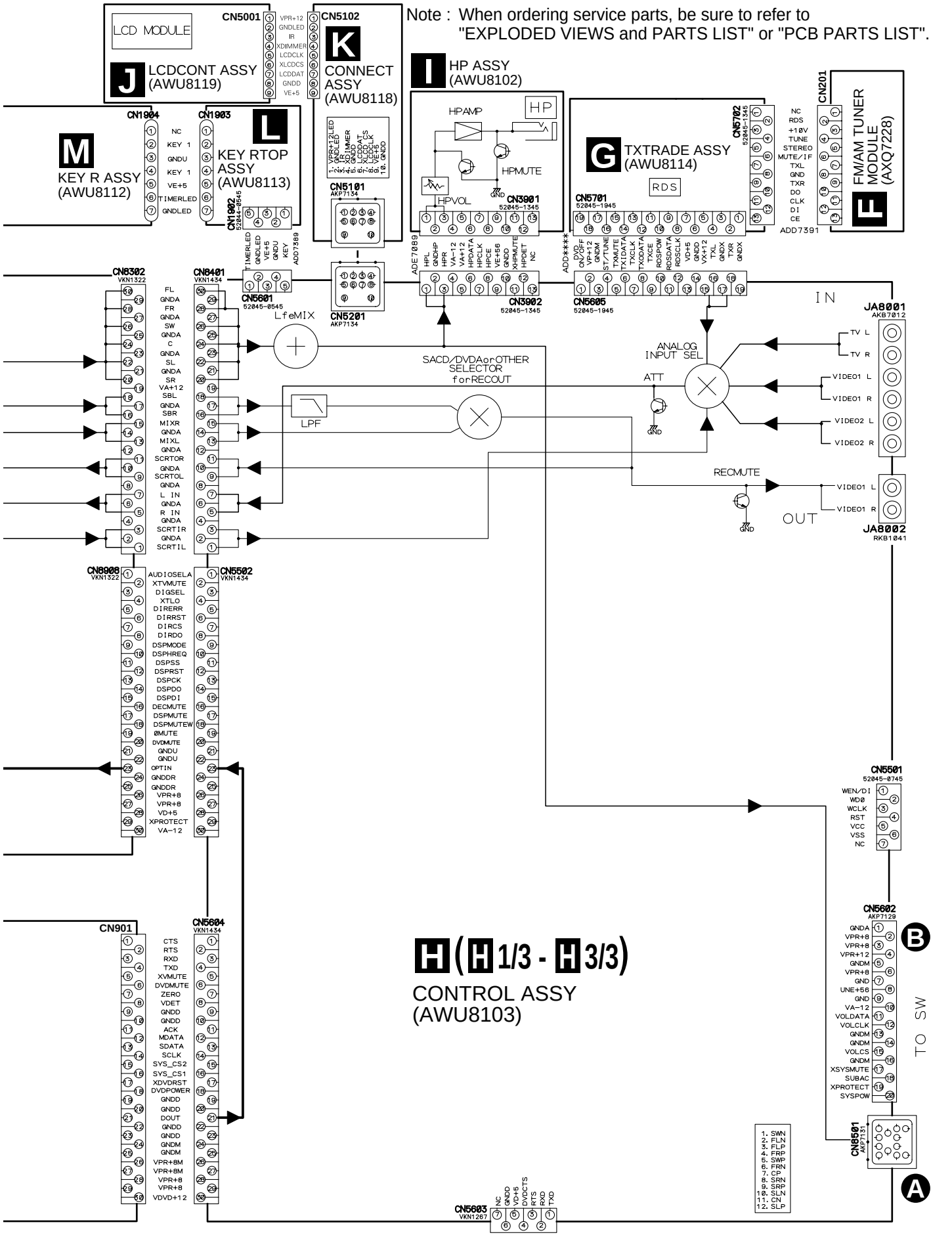
3.1 BLOCK DIAGRAM




C 1/2 VIDEO ASSY(1/2)
CN8811
CN8951
P COMPONENT ASSY
R/PR
G/Y
B/PB
V
C
Y
COMPONENT VIDEO OUT
COMPOSITE VIDEO OUT
S-VIDEO OUT
L KEY RTOP ASSY
M KEY R ASSY
N KEY L ASSY
O KEY LTOP ASSY
KEY
CN1902
DISPLAY UNIT
J LCDCONT ASSY
IR SENSOR
LCD
CN5001
CN5102
CN5601
IC5501
PDC110B
micro Processoer
CN5201
CN5101
K CONNECT ASSY
H CONTROL ASSY
IC8381
IC8382
FL/FR
CN8906(3/3)
SW
Center
SL/SR
REC OUT
CN8907(2/2)
CN8302(2/2)
CN8401(2/2)
LPF
IC8402
IC8401
SW MIX/GAIN
CN8501
CN3701
POWERED SUBWOOFER
IC3001
M62446AFP
E-VOL
6ch E-vol
ANDREW
IC3301
STK402- 270
3ch Power Amp
IC3401
STK402- 270
3ch Power Amp
SPEAKER RELAY
FL/FR OUT
SW OUT
CENTRE OUT
SL/SR OUT
IC3101
IC3102
IC3103
IC3104
IC8651
REC OUT SELECT
CN3902
CN3901
IC3901
E-VOL
LC75344
IC3902
JA3901
I HP ASSY
HEADPHONE OUT
LINE OUT

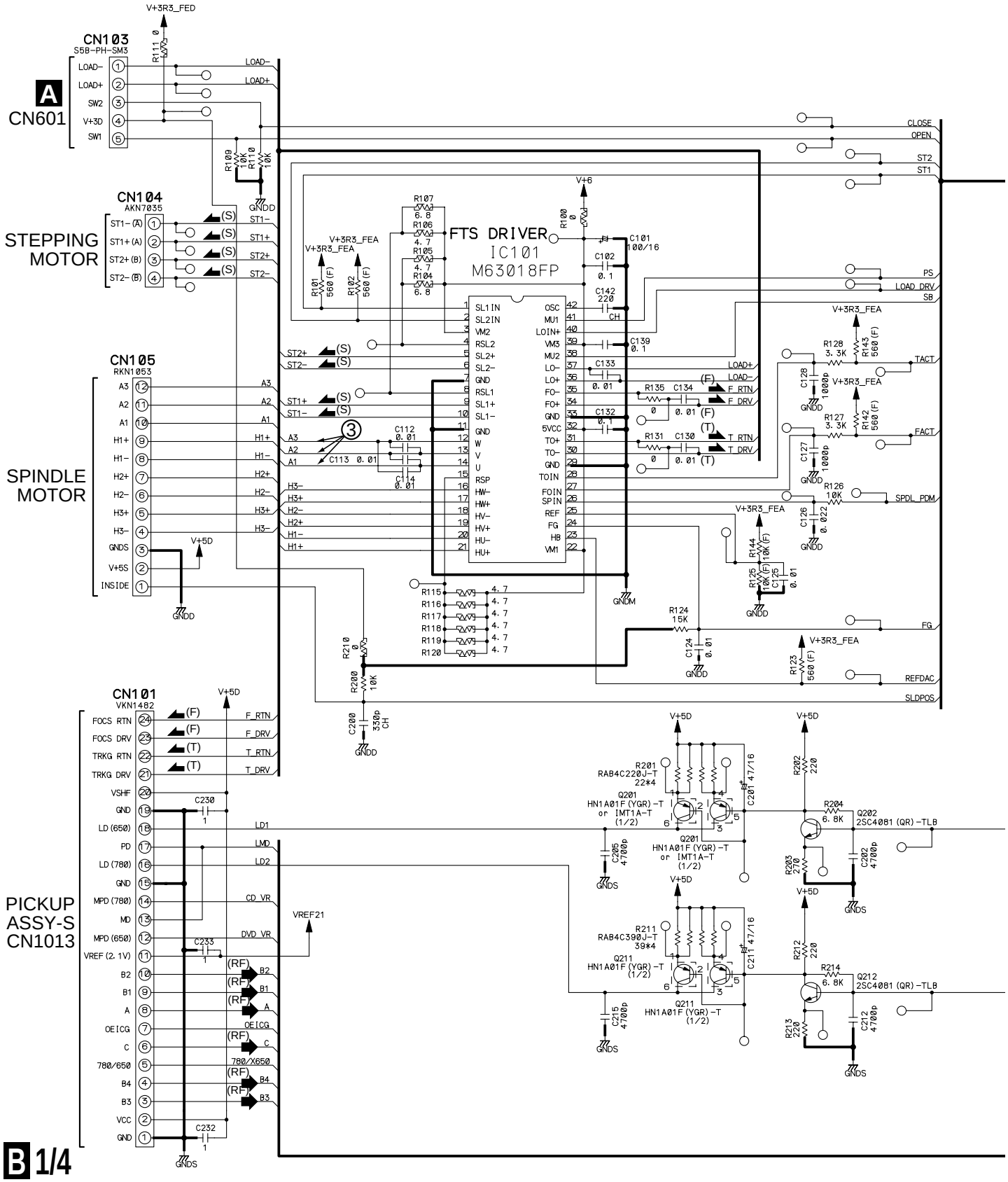
3.2 LOAB ASSY and OVERALL WIRING DIAGRAM



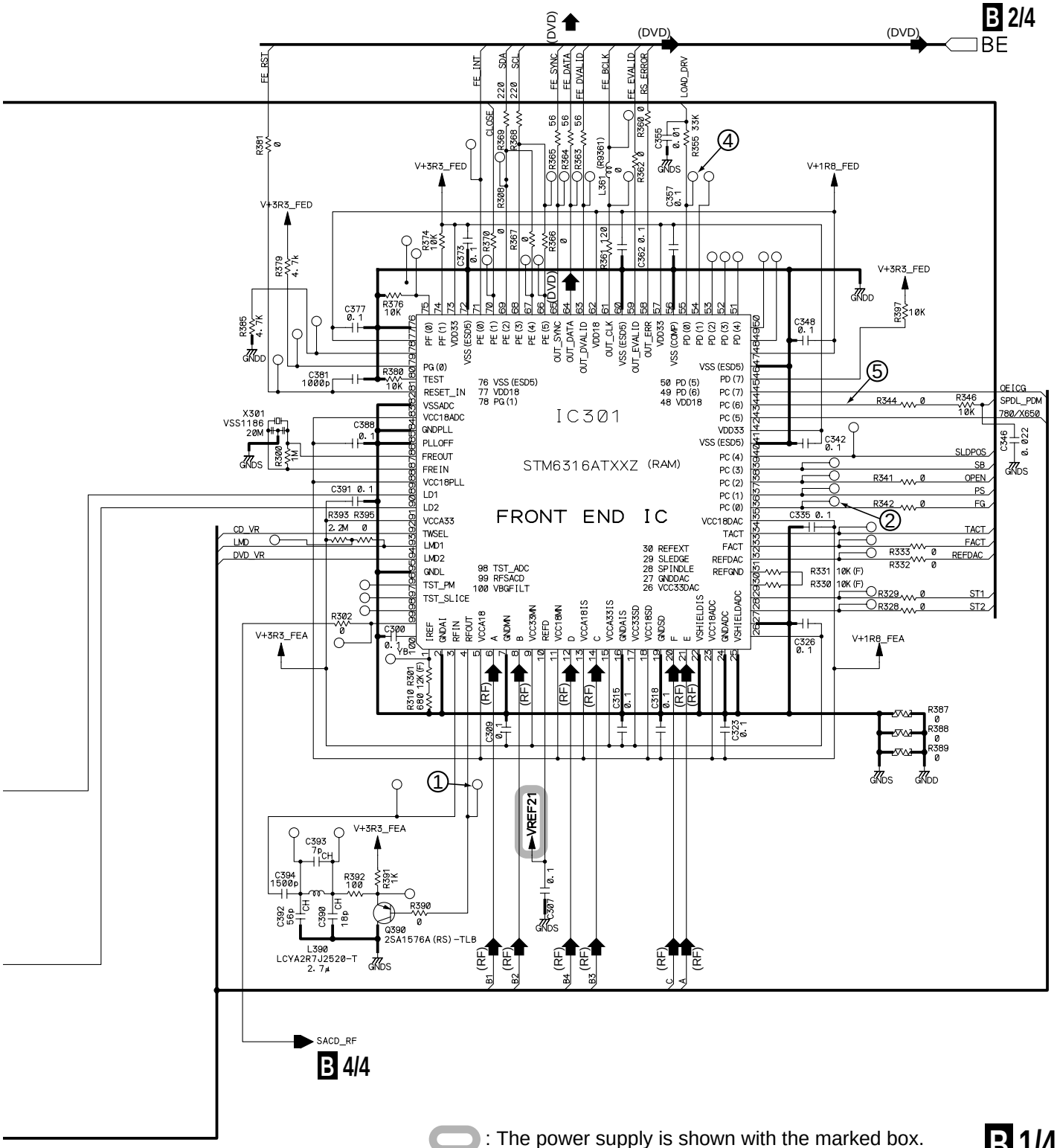

Note : When ordering service parts, be sure to refer to "EXPLODED VIEWS and PARTS LIST" or "PCB PARTS LIST".
LCD MODULE
J LCDCONT ASSY (AWU8119)
CN5001
K CONNECT ASSY (AWU8118)
CN5102
I HP ASSY (AWU8102)
HPAMP
HP
HPMUTE
HPVOL
CN3901
M KEY R ASSY (AWU8112)
CN1904
L KEY RTOP ASSY (AWU8113)
CN1903
CN1902
CN5101
AKP7134
G TXTRADE ASSY (AWU8114)
RDS
CN5702
CN5701
CN201
F FM/AM TUNER MODULE (AXQ7228)
ADD7391
CN6302
VKN1322
CN6401
VKN1434
CN5601
52045-0545
LfeMIX
CN5201
AKP7134
CN3902
52045-1345
CN5605
52045-1945
SACD/DVDAorOTHER SELECTOR forRECOUT
LPF
ANALOG INPUT SEL
ATT
IN
JA8001
AKB7012
TV L
TV R
VIDEO1 L
VIDEO1 R
VIDEO2 L
VIDEO2 R
RECMUTE
OUT
JA8002
RKB1041
CN8908
VKN1322
CN5502
VKN1434
CN5501
52045-0745
CN5602
AKP7129
TO SW
CN901
CN5604
VKN1434
H (H 1/3 - H 3/3)
CONTROL ASSY (AWU8103)
CN8501
AKP7131
CN5603
VKN1267

3.3 DVDM ASSY(1/4)

B 1/4 DVDM ASSY (AWM7813)

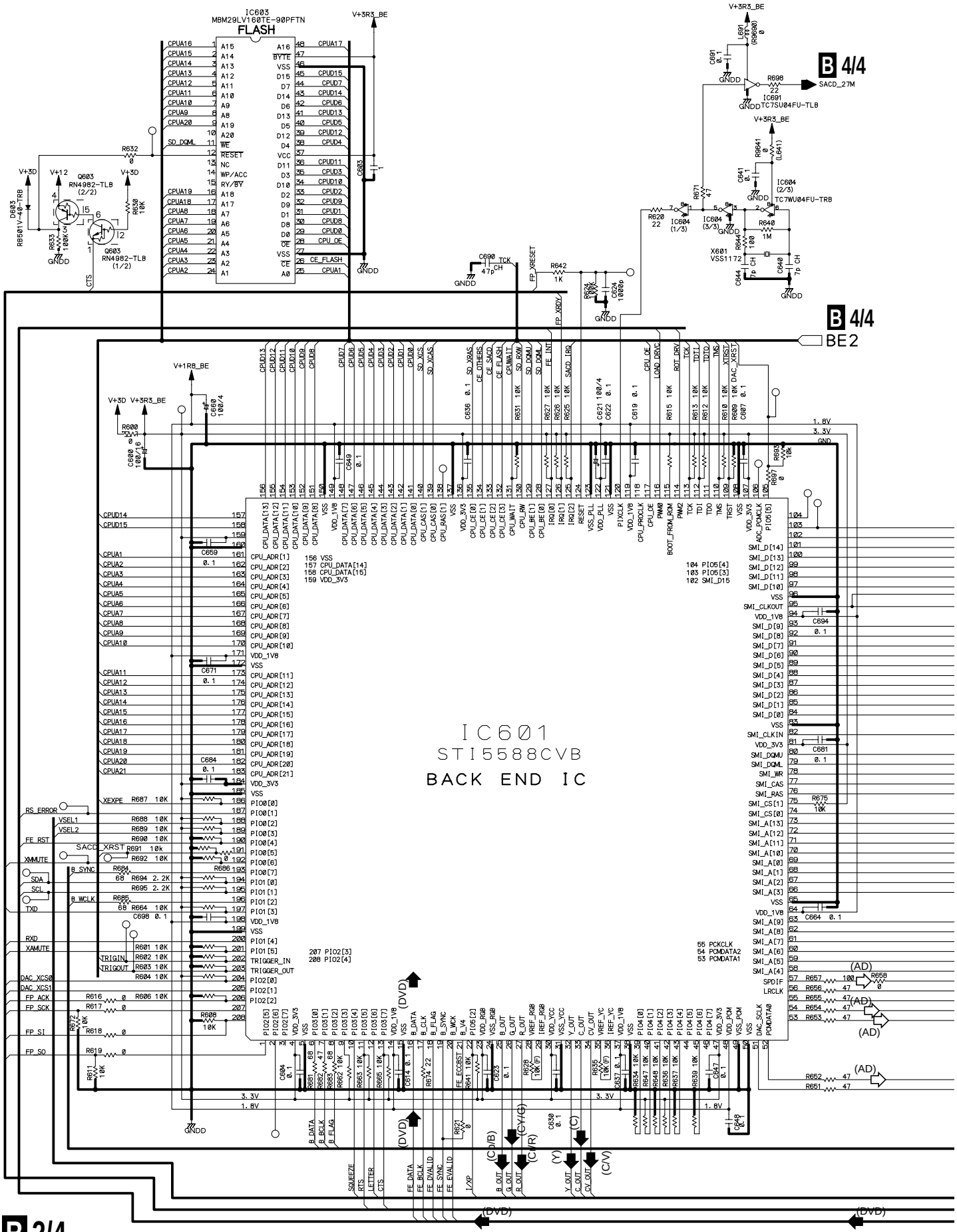


(RF): RF SIGNAL ROUTE
(DVD): DVD DATA SIGNAL ROUTE
(F): FOCUS SERVO LOOP LINE
(T): TRACKING SERVO LOOP LINE
(S): STEPPING SERVO LOOP LINE



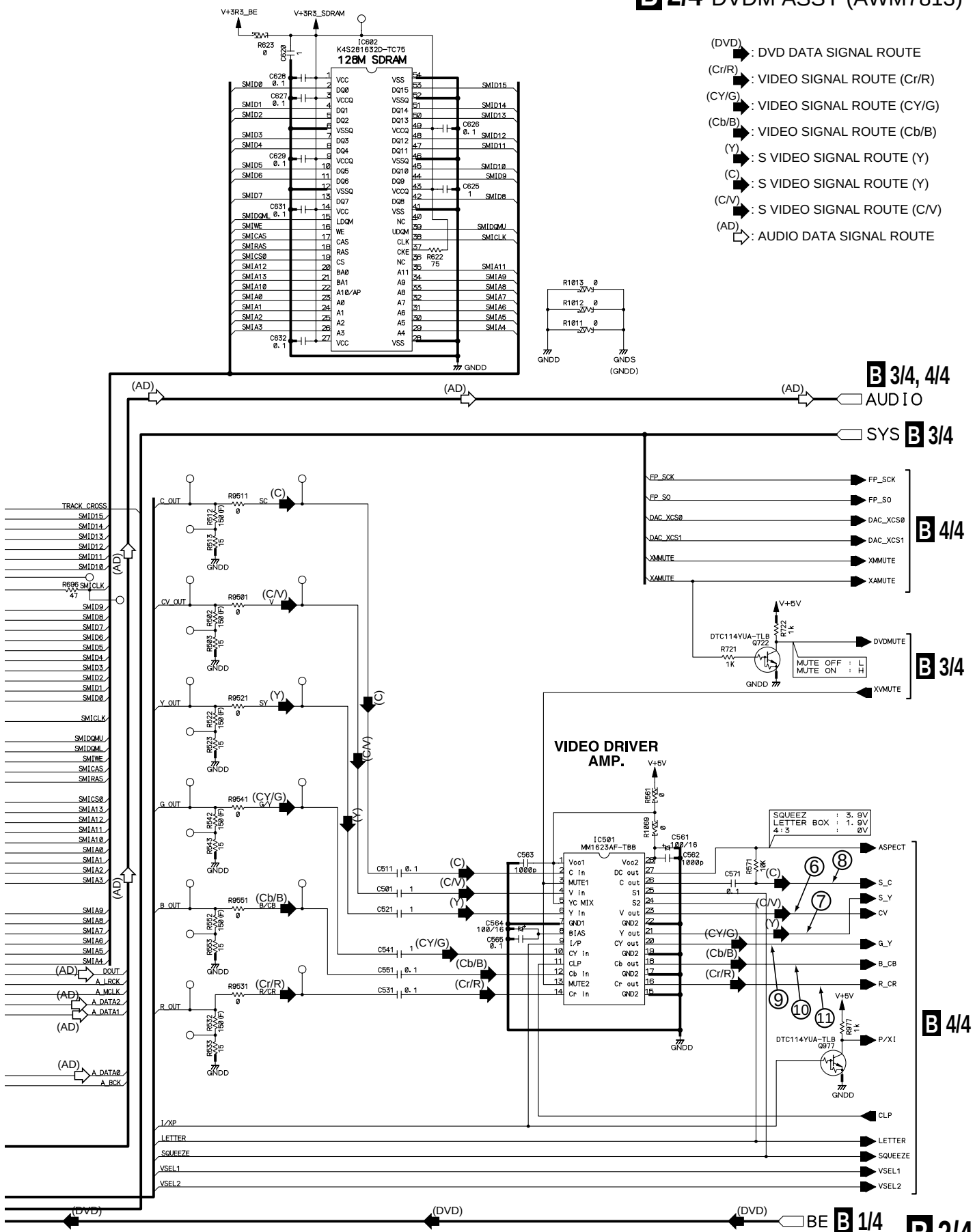
: The power supply is shown with the marked box.

3.4 DVDM ASSY(2/4)

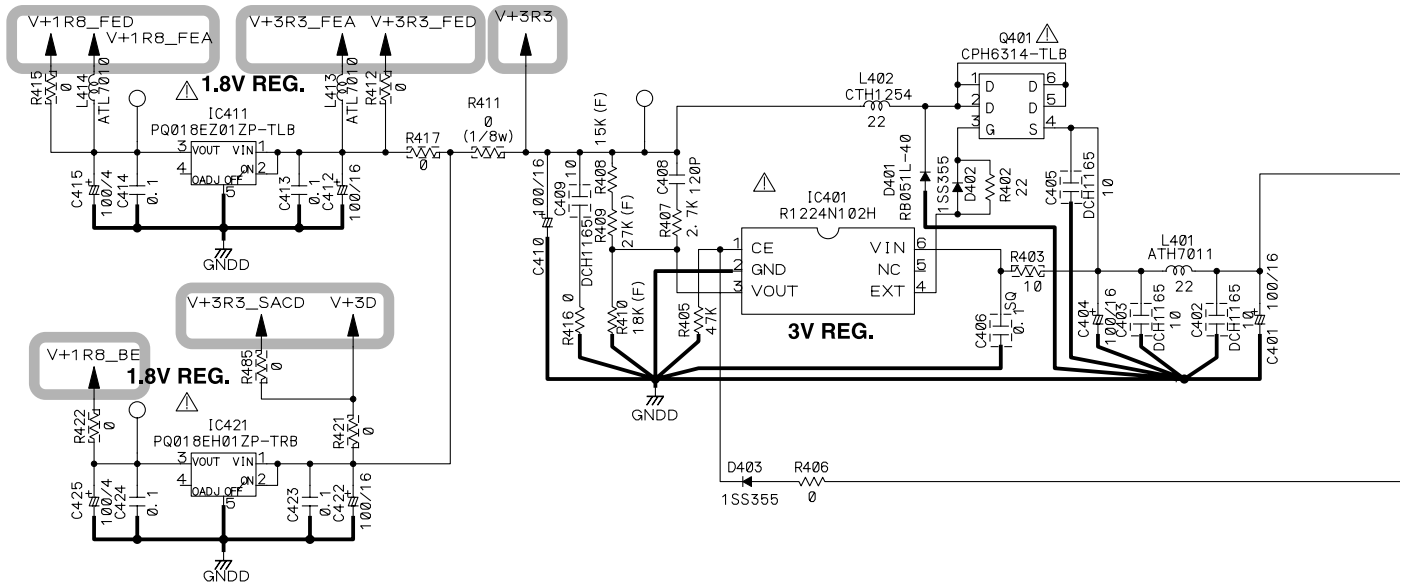


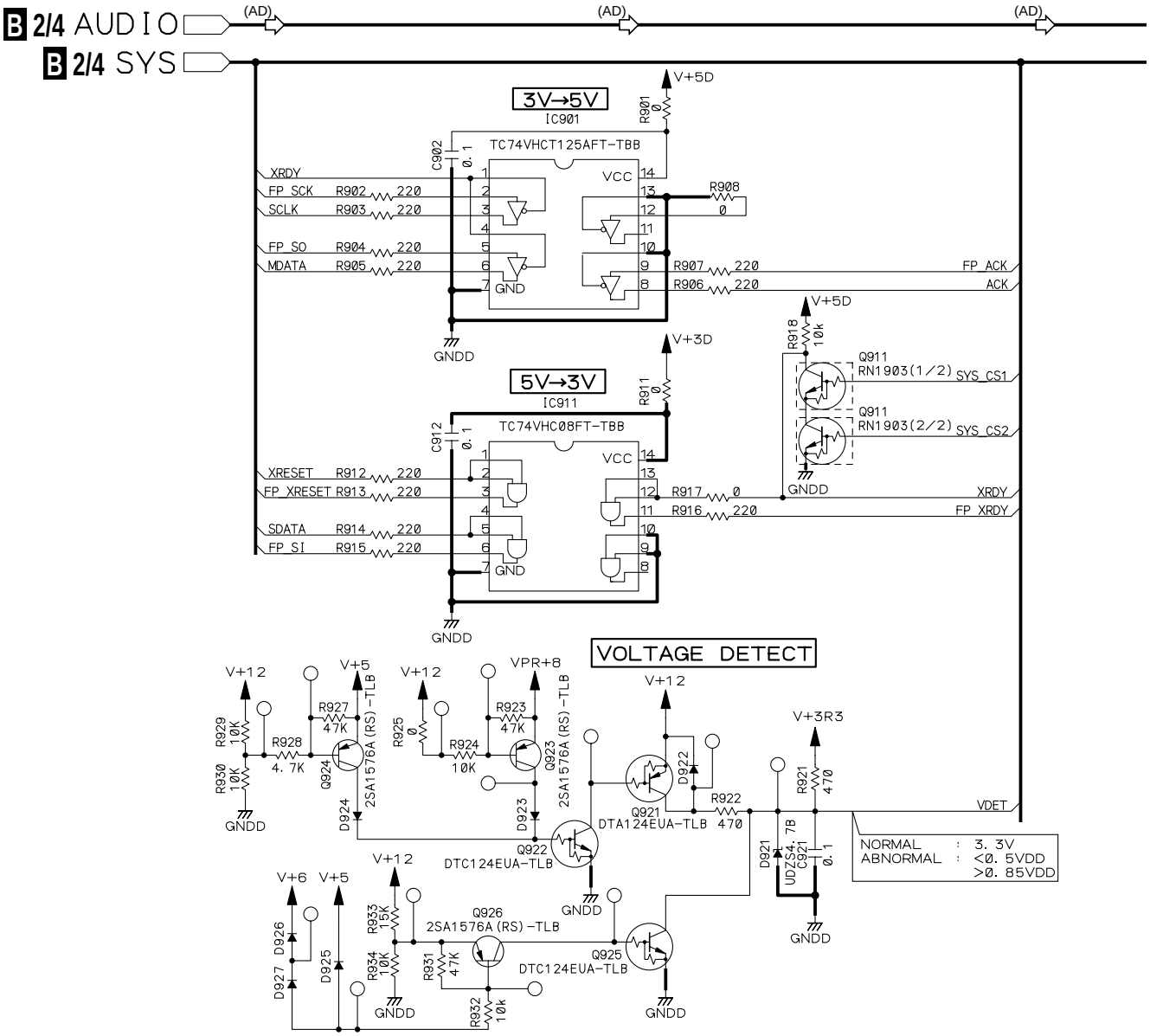
B 2/4 DVDM ASSY (AWM7813)

(DVD) : DVD DATA SIGNAL ROUTE
(Cr/R) : VIDEO SIGNAL ROUTE (Cr/R)
(CY/G) : VIDEO SIGNAL ROUTE (CY/G)
(Cb/B) : VIDEO SIGNAL ROUTE (Cb/B)
(Y) : S VIDEO SIGNAL ROUTE (Y)
(C) : S VIDEO SIGNAL ROUTE (Y)
(C/V) : S VIDEO SIGNAL ROUTE (C/V)
(AD) : AUDIO DATA SIGNAL ROUTE



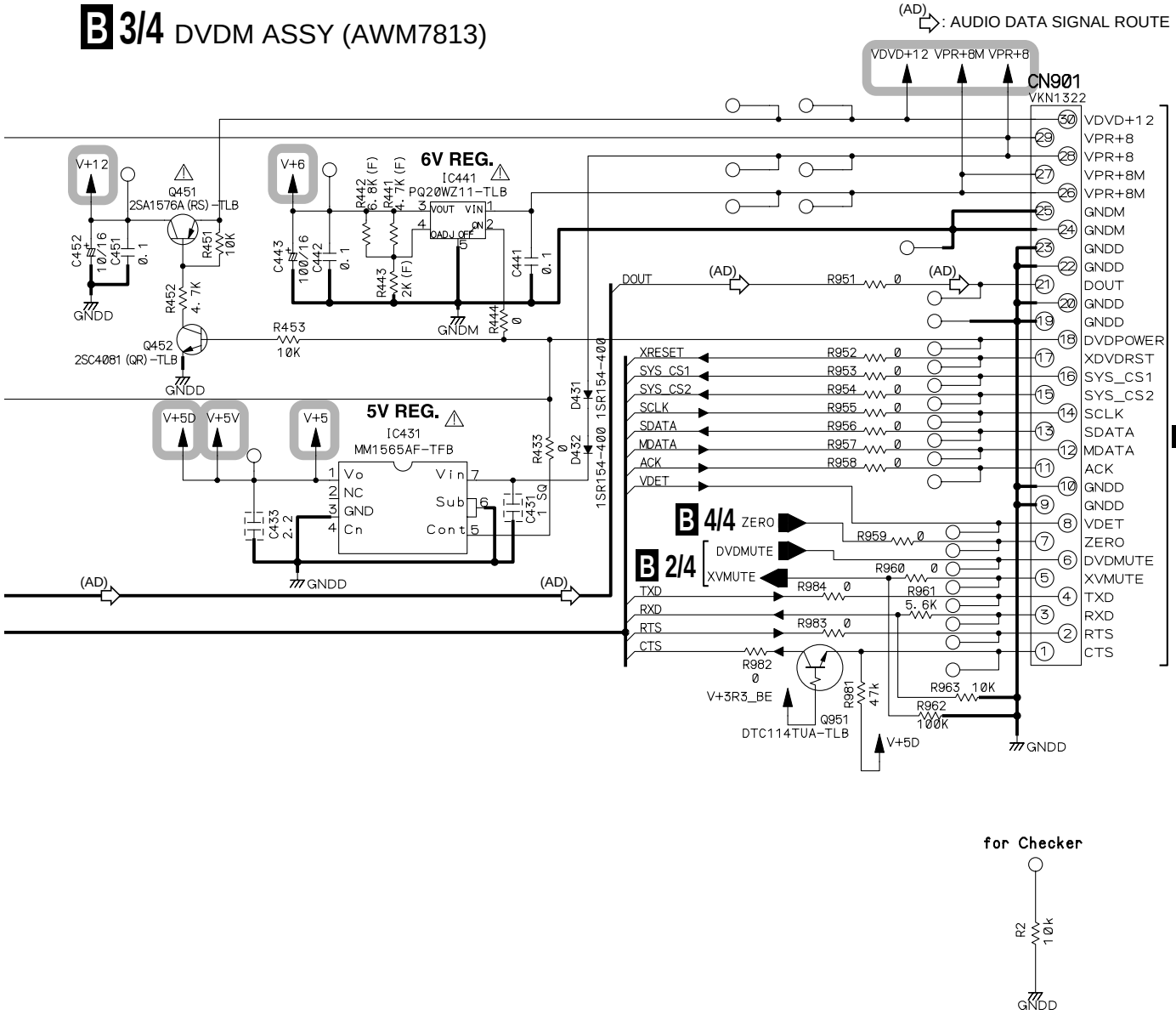
3.5 DVDM ASSY(3/4)





B 3/4

B 3/4 DVDM ASSY (AWM7813)

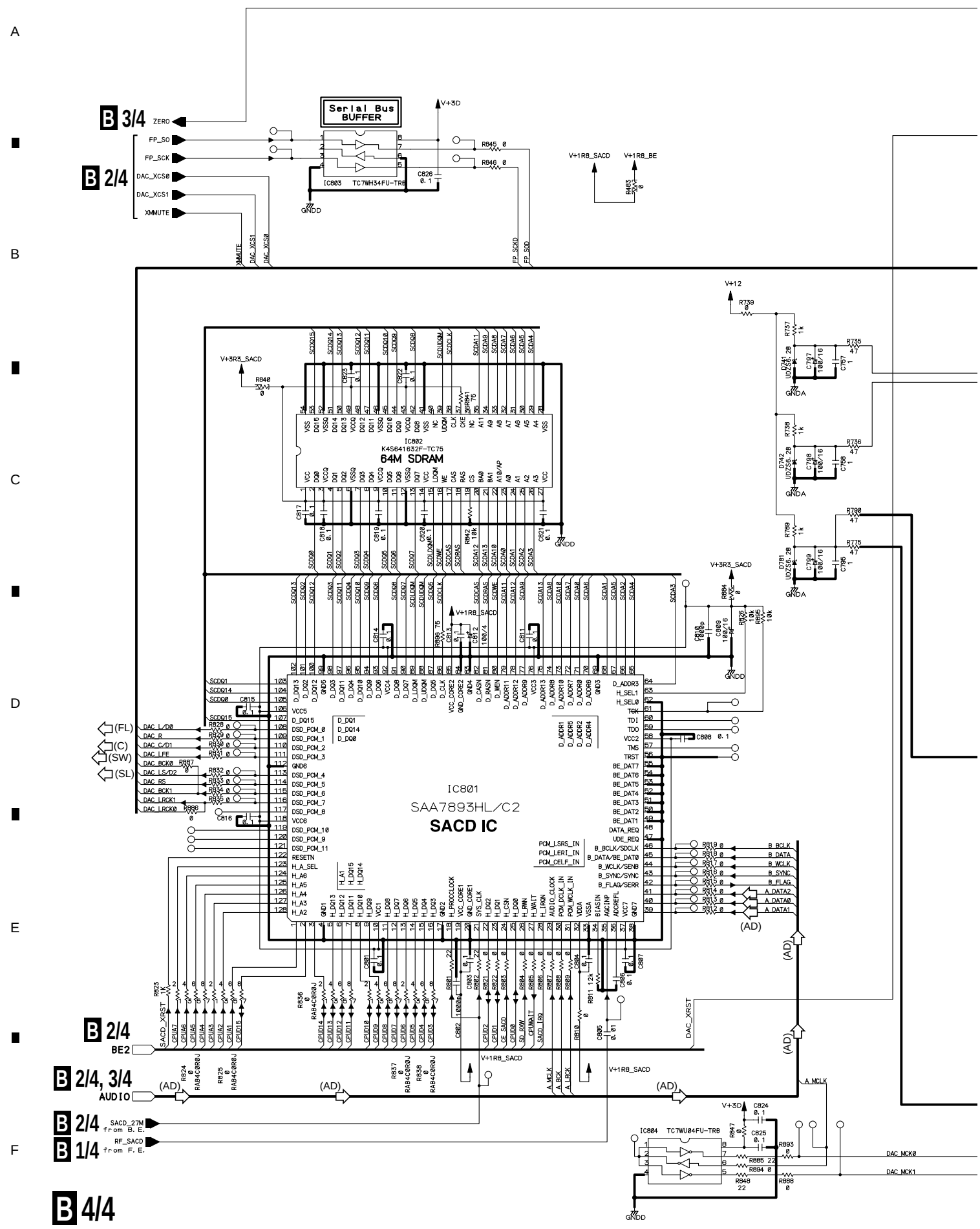


for Checker

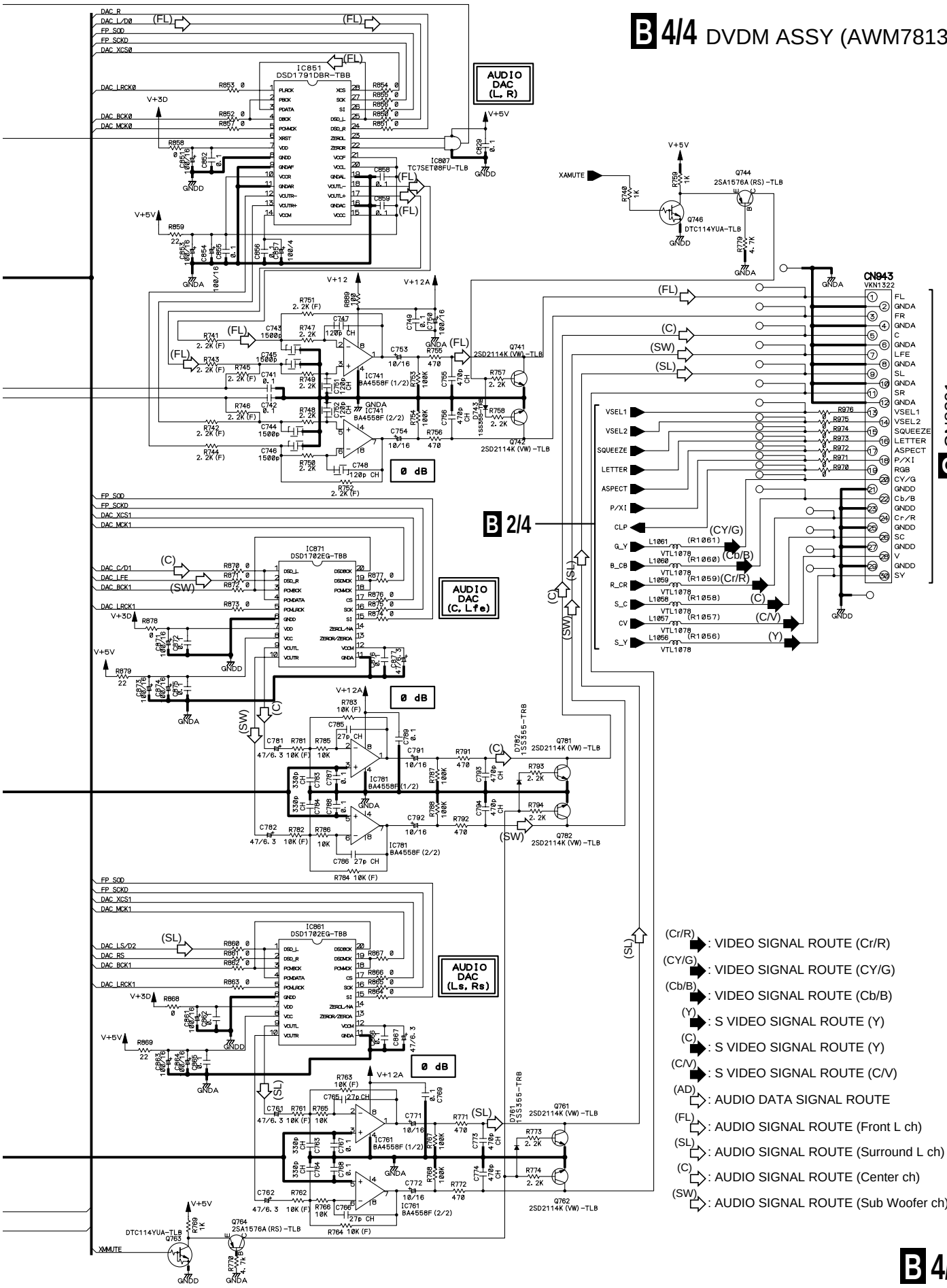
: The power supply is shown with the marked box.

B 3/4

3.6 DVDM ASSY(4/4)

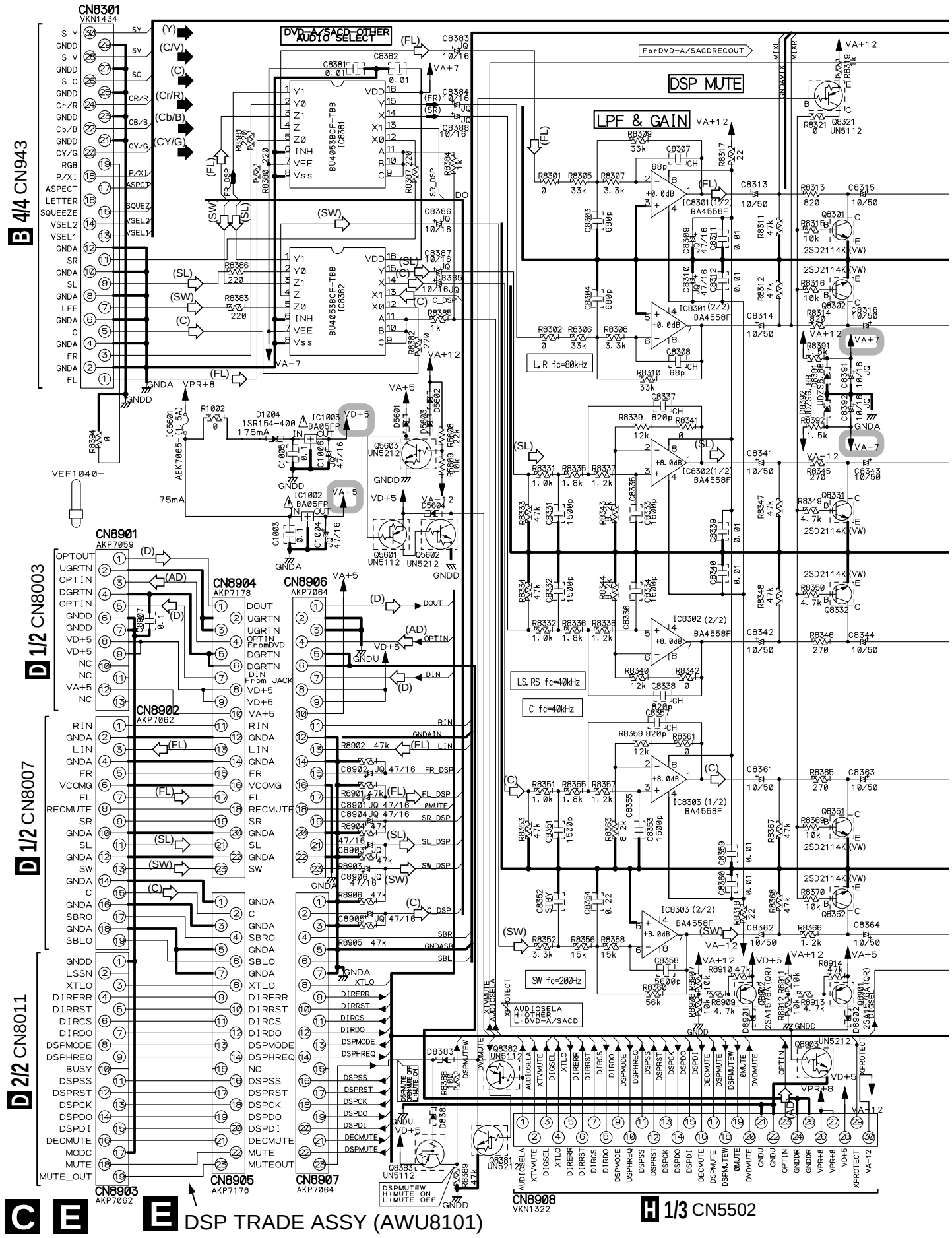


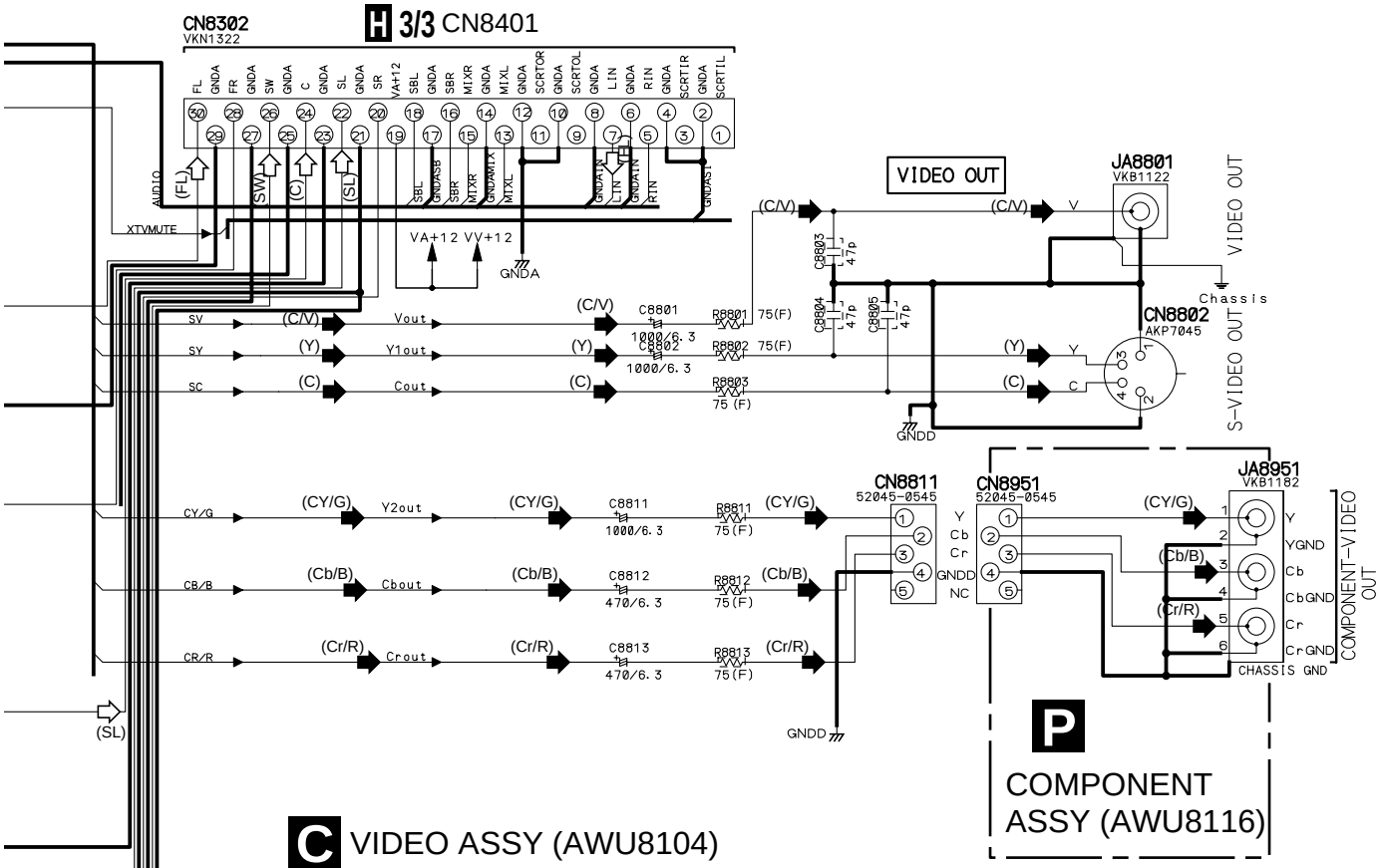
B 4/4 DVDM ASSY (AWM7813)



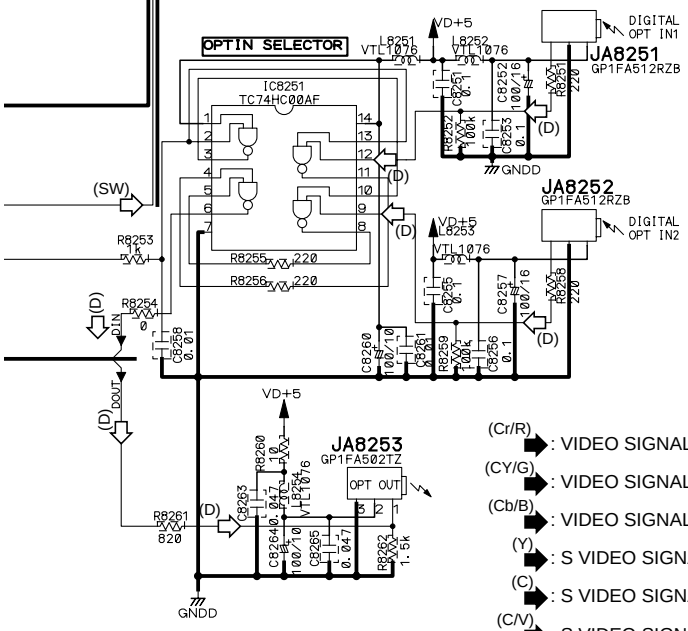
B 4/4

3.7 VIDEO, DSP TRADE and COMPONENT ASSYS





: The power supply is shown with the marked box.



CAUTION :
FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE ONLY WITH SAME TYPE NO. 49101.5F MFD, BY LITTELFUSE INK. FOR IC5601 (AEK7065).

(Cr/R) : VIDEO SIGNAL ROUTE (Cr/R)
(CY/G) : VIDEO SIGNAL ROUTE (CY/G)
(Cb/B) : VIDEO SIGNAL ROUTE (Cb/B)
(Y) : S VIDEO SIGNAL ROUTE (Y)
(C) : S VIDEO SIGNAL ROUTE (Y)
(C/V) : S VIDEO SIGNAL ROUTE (C/V)

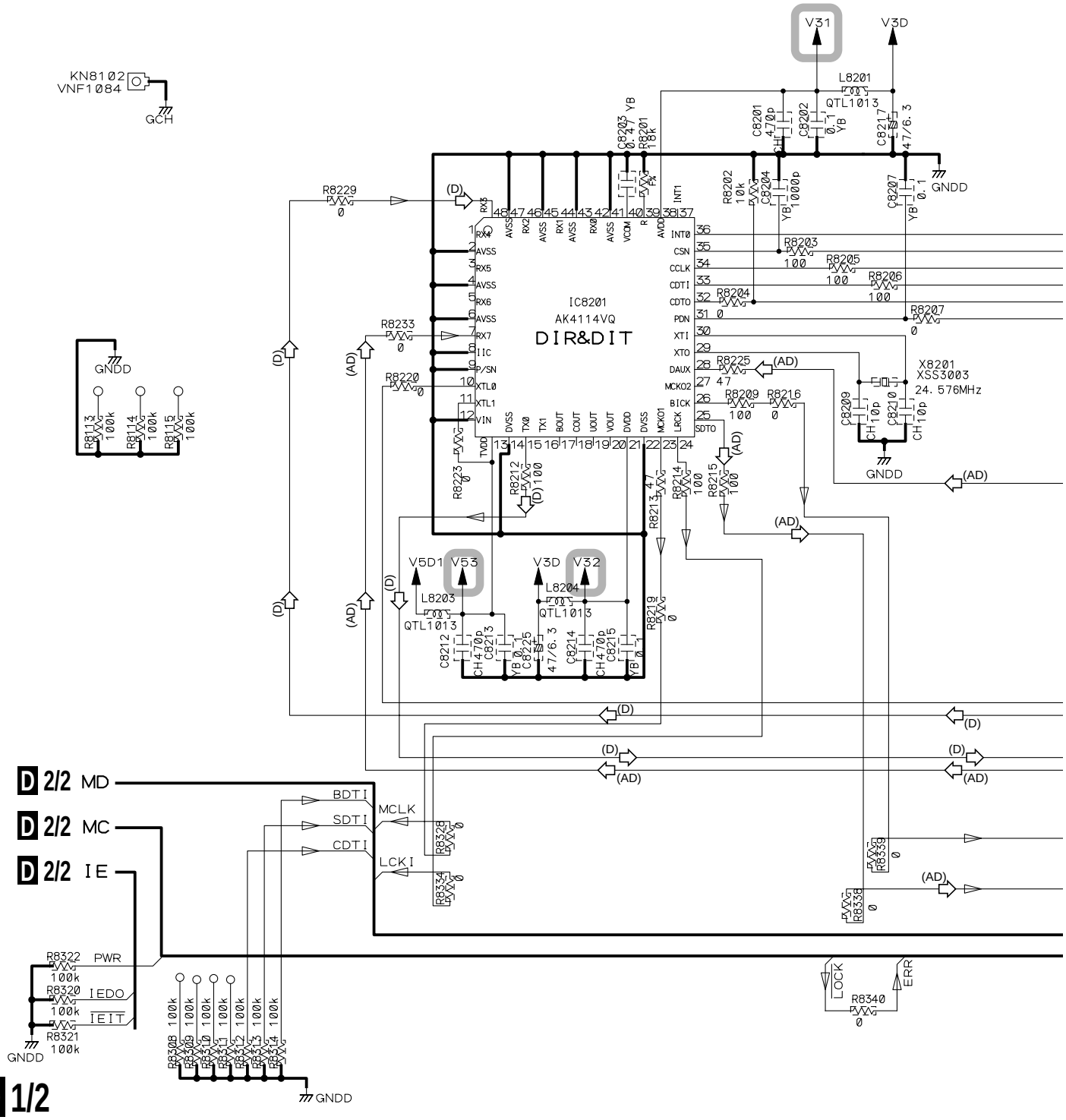
(FL) : AUDIO SIGNAL ROUTE (Front L ch)
(SL) : AUDIO SIGNAL ROUTE (Surround L ch)
(C) : AUDIO SIGNAL ROUTE (Center ch)
(SW) : AUDIO SIGNAL ROUTE (Sub Woofer ch)
(D) : AUDIO SIGNAL ROUTE (DIGITAL ch)
(AD) : AUDIO DATA SIGNAL ROUTE

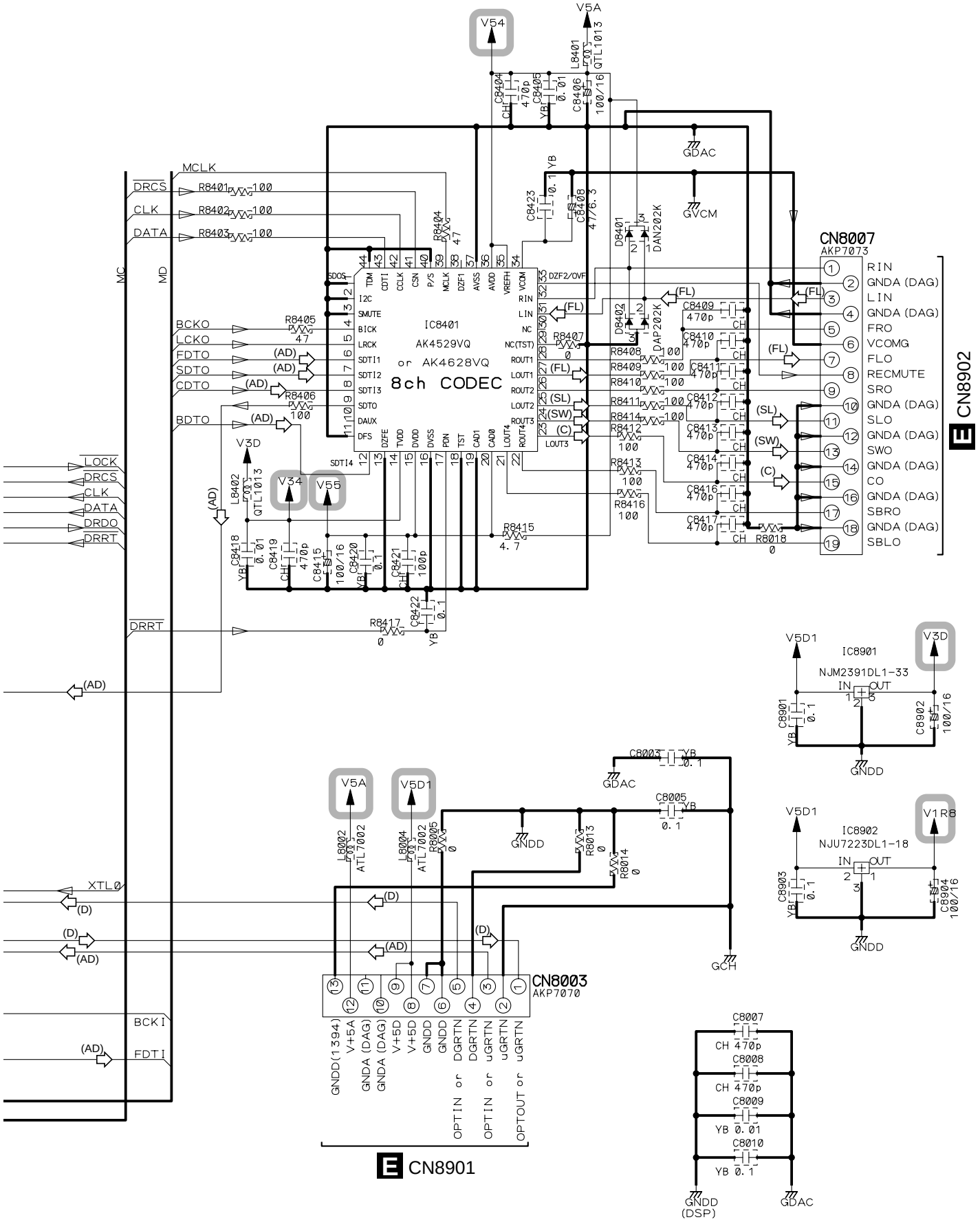
C P

3.8 DSP ASSY(1/2)

D 1/2 DSP ASSY (AWX8325)

(AD) ⇨: AUDIO DATA SIGNAL ROUTE
(FL) ⇨: AUDIO SIGNAL ROUTE (Front L ch)
(SL) ⇨: AUDIO SIGNAL ROUTE (Surround L ch)
(C) ⇨: AUDIO SIGNAL ROUTE (Center ch)
(SW) ⇨: AUDIO SIGNAL ROUTE (Sub Woofer ch)
(D) ⇨: AUDIO SIGNAL ROUTE (DIGITAL ch)



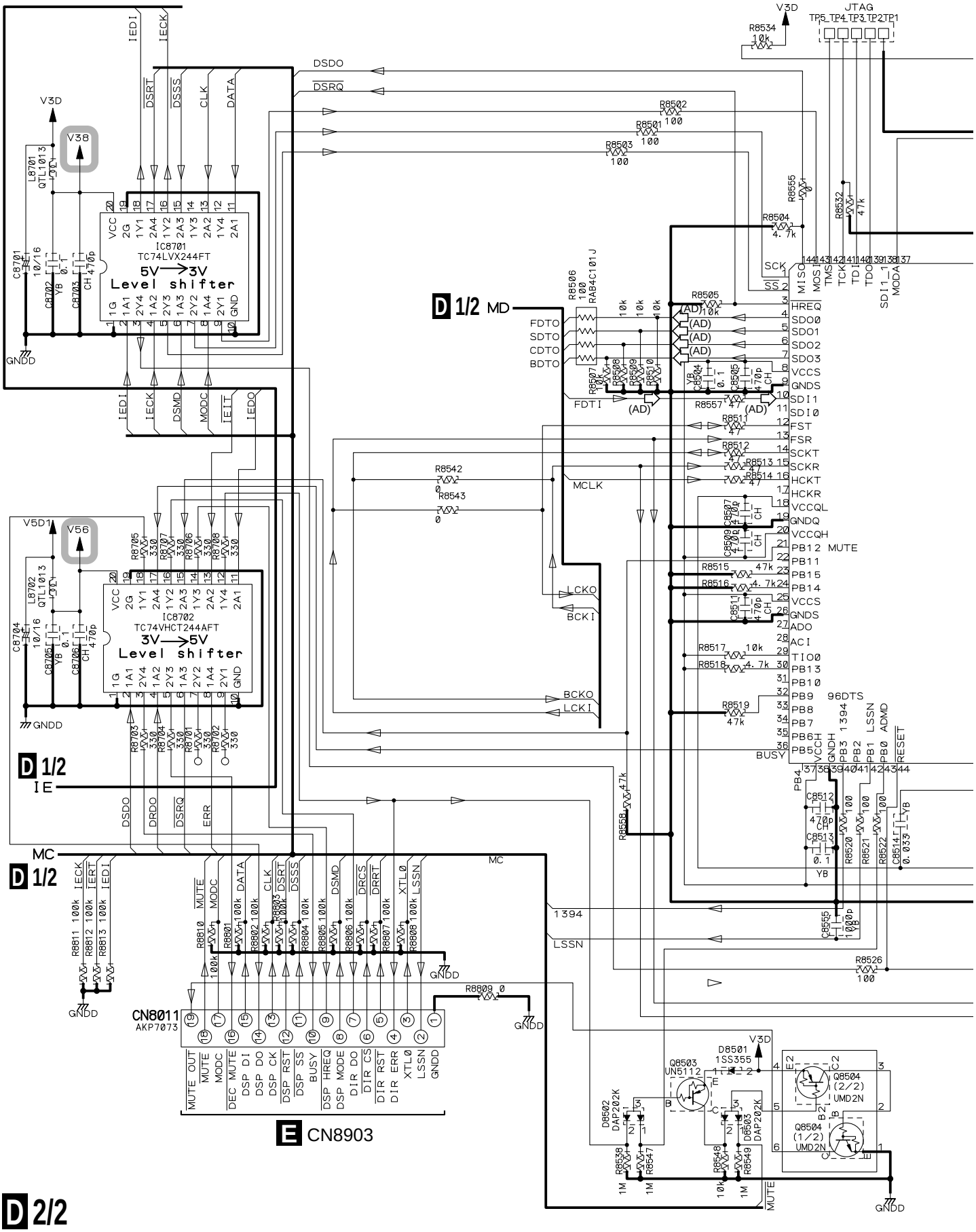


: The power supply is shown with the marked box.

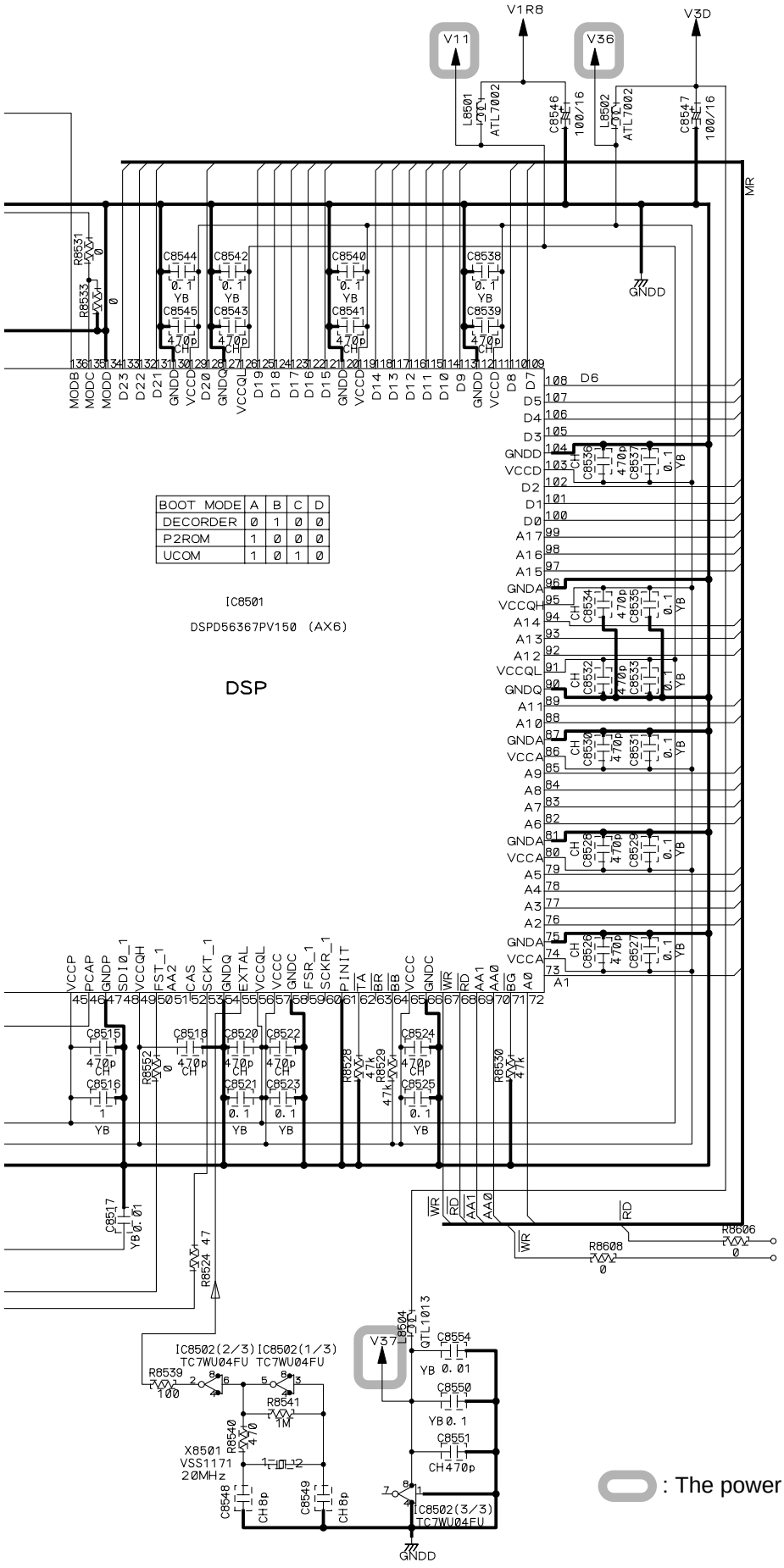
D 1/2

3.9 DSP ASSY(2/2)

D 2/2 DSP ASSY (AWX8325)



(AD) : AUDIO DATA SIGNAL ROUTE

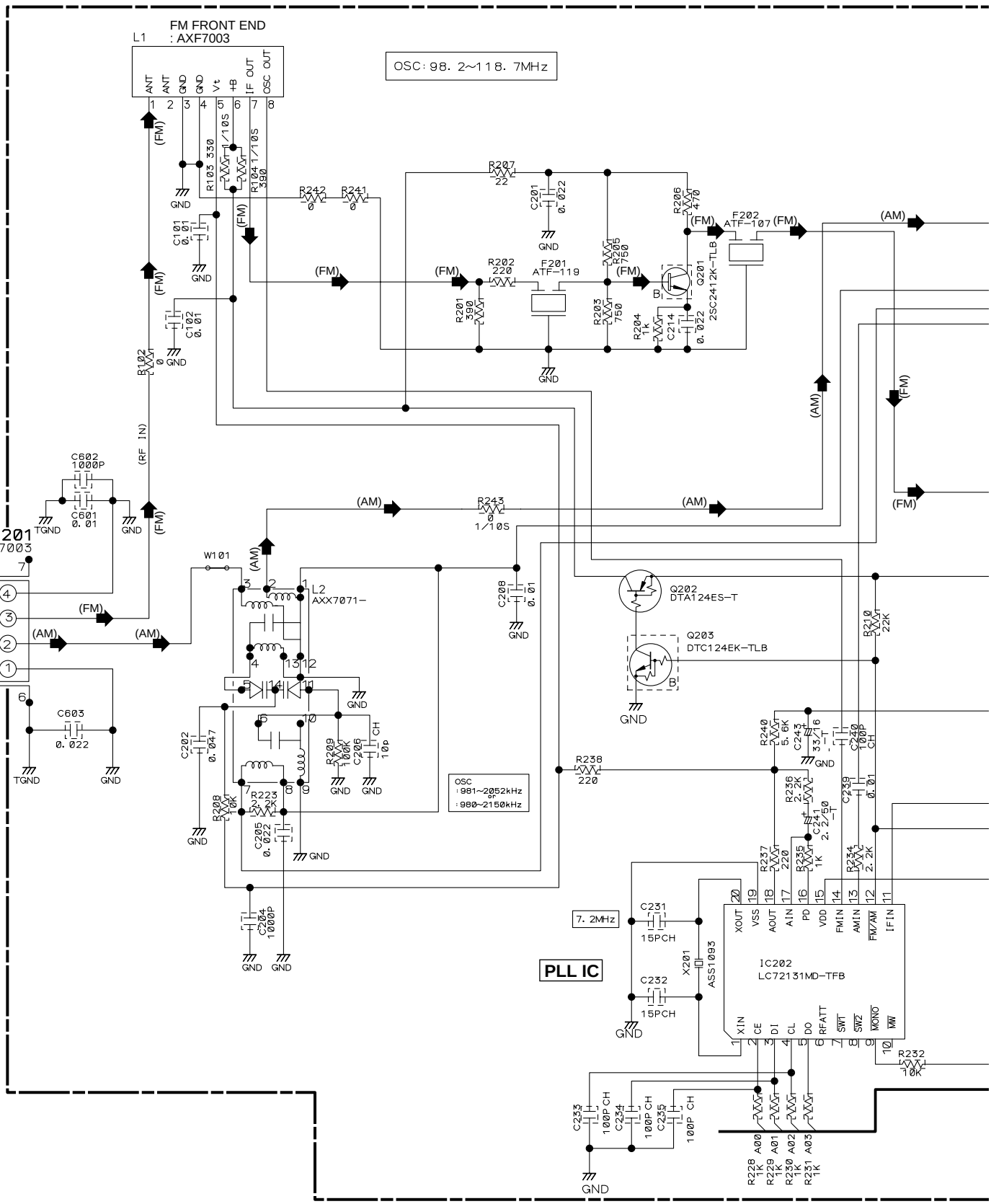

V1R8
V11
V36
V3D
L8501 10U ATL7002
L8502 10U ATL7002
C8546 1UF 100/16
C8547 1UF 100/16
MR
GNDD
R8531 0
R8533 0
C8544 0.1 YB
C8542 0.1 YB
C8540 0.1 YB
C8538 0.1 YB
C8545 470p CH
C8543 470p CH
C8541 470p CH
C8539 470p CH
MODB MODC MODD D23 D22 D21 GNDD VCCD D20 GNDQ VCCQL D19 D18 D17 D16 D15 GNDD VCCD D14 D13 D12 D11 D10 D9 GNDD VCCD D8 D7
D6 D5 D4 D3 GNDD VCCD D2 D1 D0 A17 A16 A15 GNDA VCCQH A14 A13 A12 VCCQL GNDQ A11 A10 GNDA VCCA A9 A8 A7 A6 GNDA VCCA A5 A4 A3 A2 GNDA VCCA A1
C8536 C8537 C8534 C8535 C8532 C8533 C8530 C8531 C8528 C8529 C8526 C8527
BOOT MODE | A | B | C | D
DECORDER | 0 | 1 | 0 | 0
P2ROM | 1 | 0 | 0 | 0
UCOM | 1 | 0 | 1 | 0
IC8501
DSPD56367PV150 (AX6)
DSP
VCCP PCAP GNDP SDIO_1 VCCQH FST_1 AA2 CAS SCKT_1 GNDQ EXTAL VCCQL VCCC GNDC FSR_1 SCKR_1 PINIT TA BR BB VCCC GNDC WR RD AA1 AA0 BG A0
C8515 C8516 C8518 C8520 C8521 C8522 C8523 C8524 C8525
R8552 R8528 R8529 R8530
C8517 0.01 YB
R8524 47
WR RD AA1 AA0
R8606 0
R8608 0
IC8502(2/3) IC8502(1/3)
TC7WU04FU TC7WU04FU
R8539 100
R8541 1M
R8540 470
X8501 VSS1171 20MHz
C8548 CH8p
C8549 CH8p
L8504 QTL1013
C8554 YB 0.01
C8550 YB 0.1
C8551 CH 470p
IC8502(3/3) TC7WU04FU
GNDD

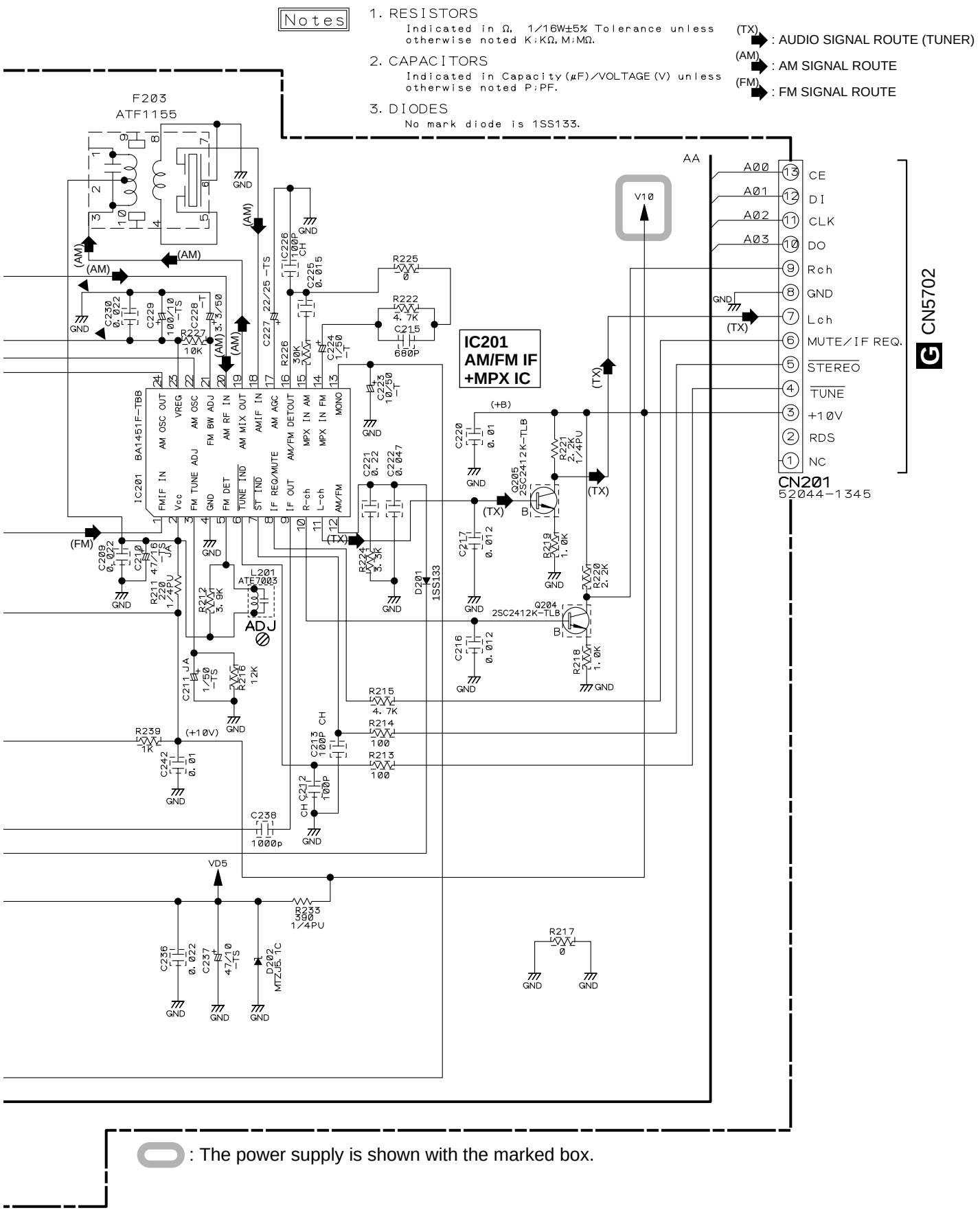
: The power supply is shown with the marked box.

D 2/2

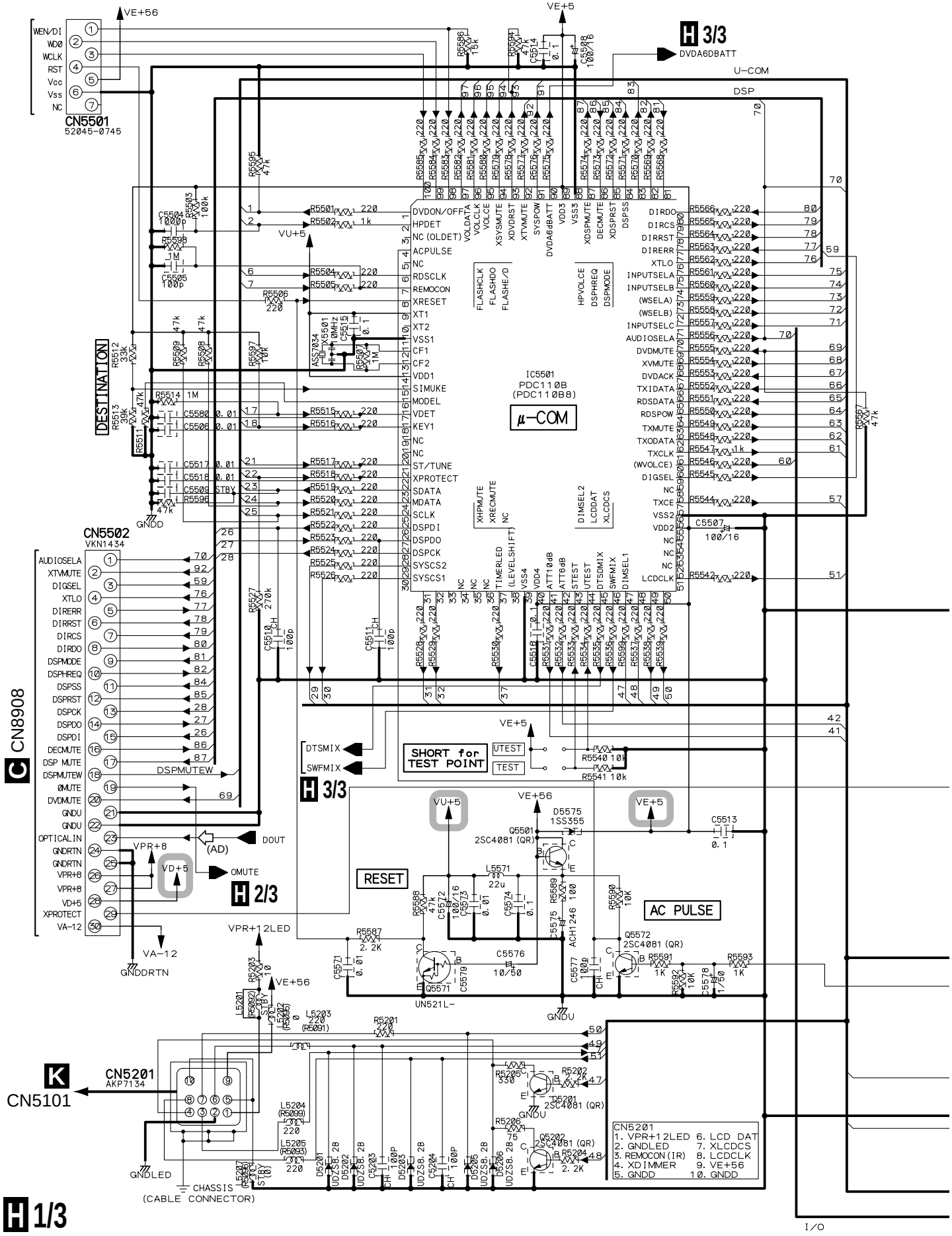
3.10 FM/AM TUNER MODULE

F FM/AM TUNER MODULE (AXQ7228)



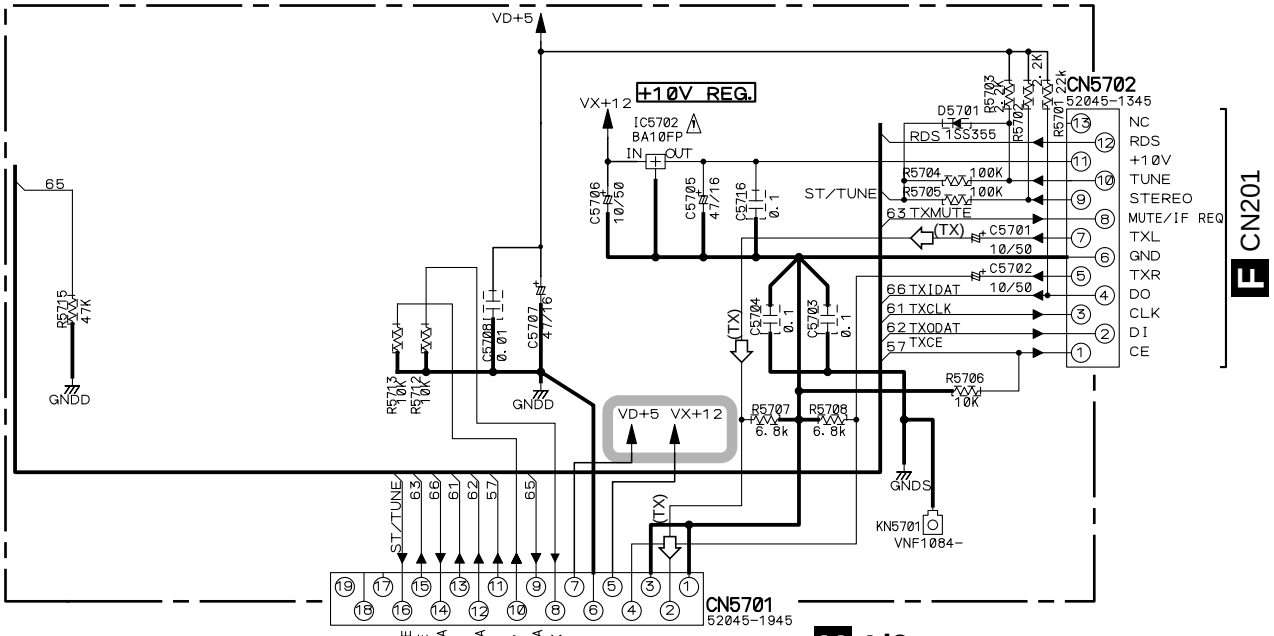

Notes
1. RESISTORS
Indicated in Ω, 1/16W±5% Tolerance unless otherwise noted K;KΩ, M;MΩ.
2. CAPACITORS
Indicated in Capacity(μF)/VOLTAGE(V) unless otherwise noted P;PF.
3. DIODES
No mark diode is 1SS133.
(TX) : AUDIO SIGNAL ROUTE (TUNER)
(AM) : AM SIGNAL ROUTE
(FM) : FM SIGNAL ROUTE
IC201
AM/FM IF
+MPX IC
IC201 BA1451F-TBB
CN201
52044-1345
CN5702
L201 ATE7003
ADJ
Q205 2SC2412K-TLB
Q204 2SC2412K-TLB
D201 1SS133
D202 MTZJ5.1C
F203 ATF1155
: The power supply is shown with the marked box.

3.11 TATRADE and CONTROL(1/3) ASSYS

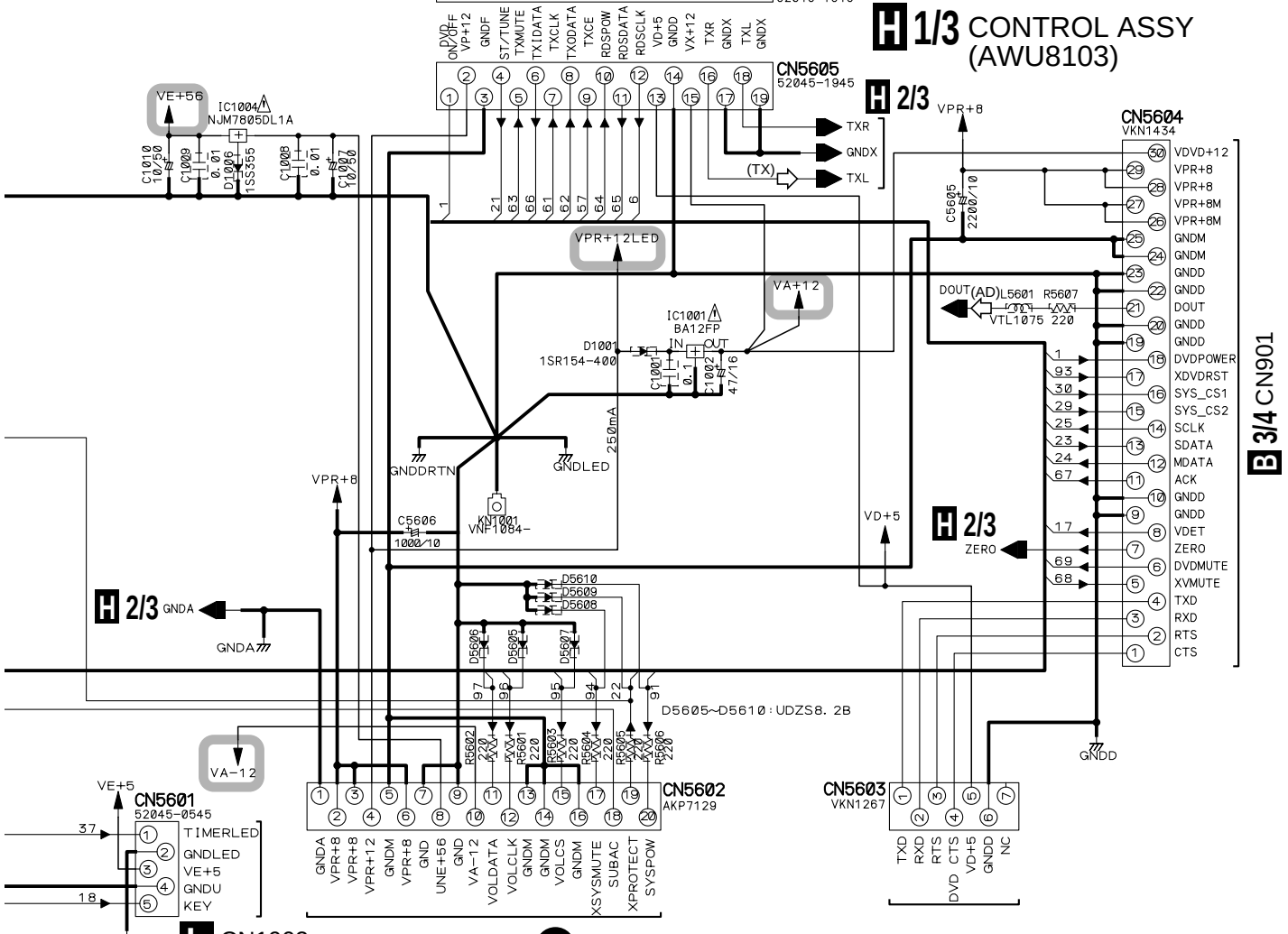


: The power supply is shown with the marked box.

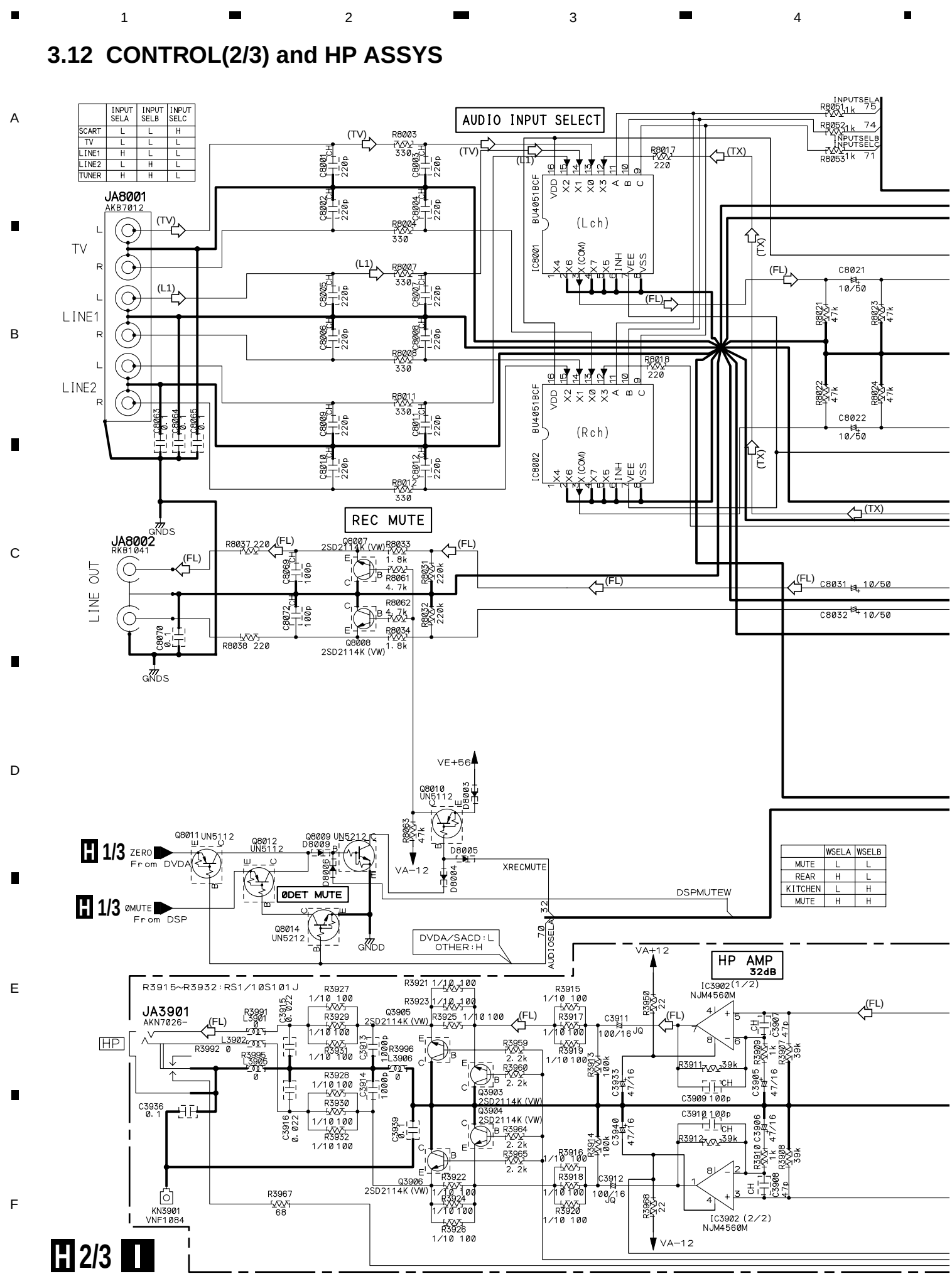
G TXTRADE ASSY (AWU8115)



H 1/3 CONTROL ASSY (AWU8103)



3.12 CONTROL(2/3) and HP ASSYS

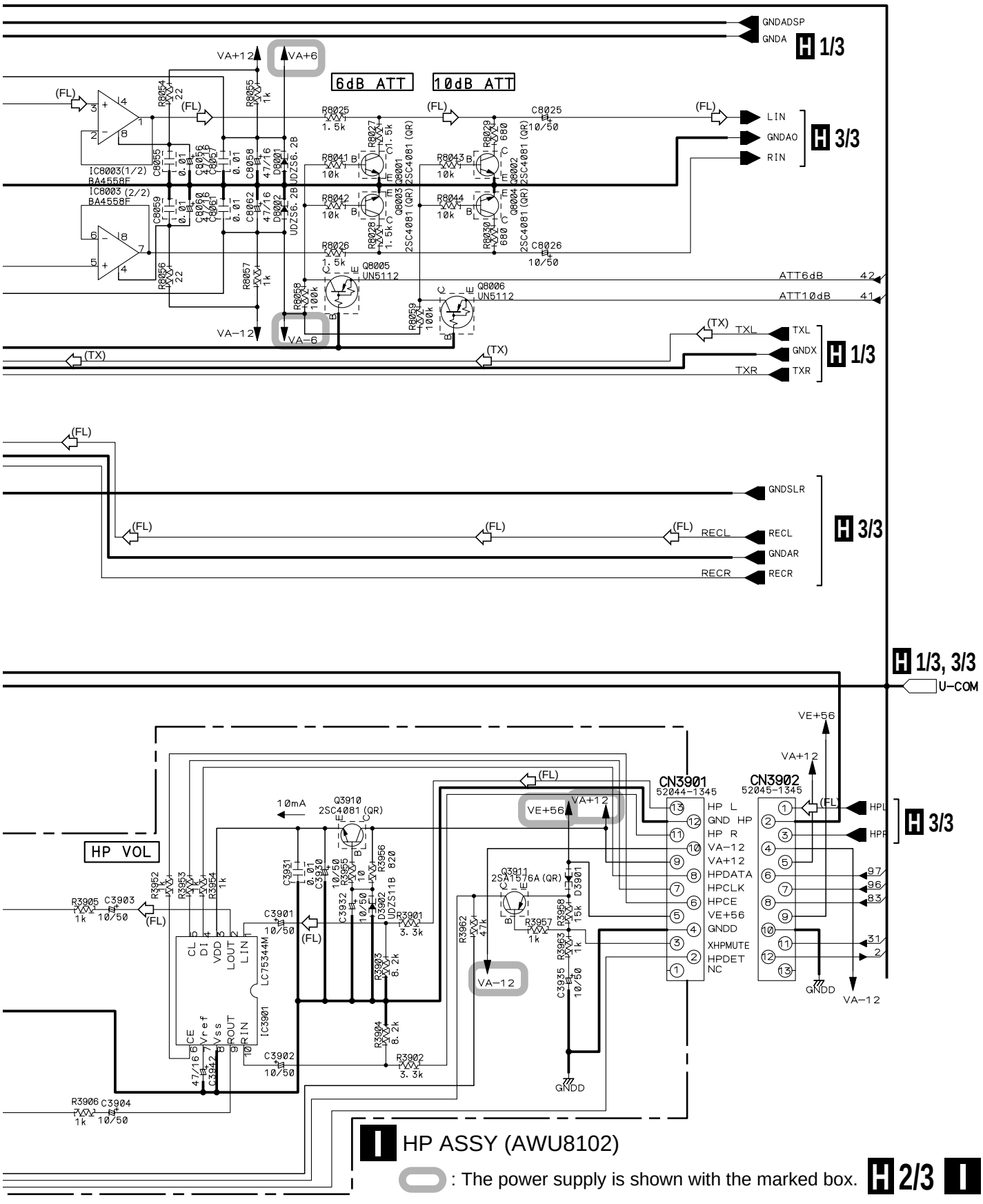


	INPUT SELA	INPUT SELB	INPUT SELC
SCART	L	L	H
TV	L	L	L
LINE1	H	L	L
LINE2	L	H	L
TUNER	H	H	L

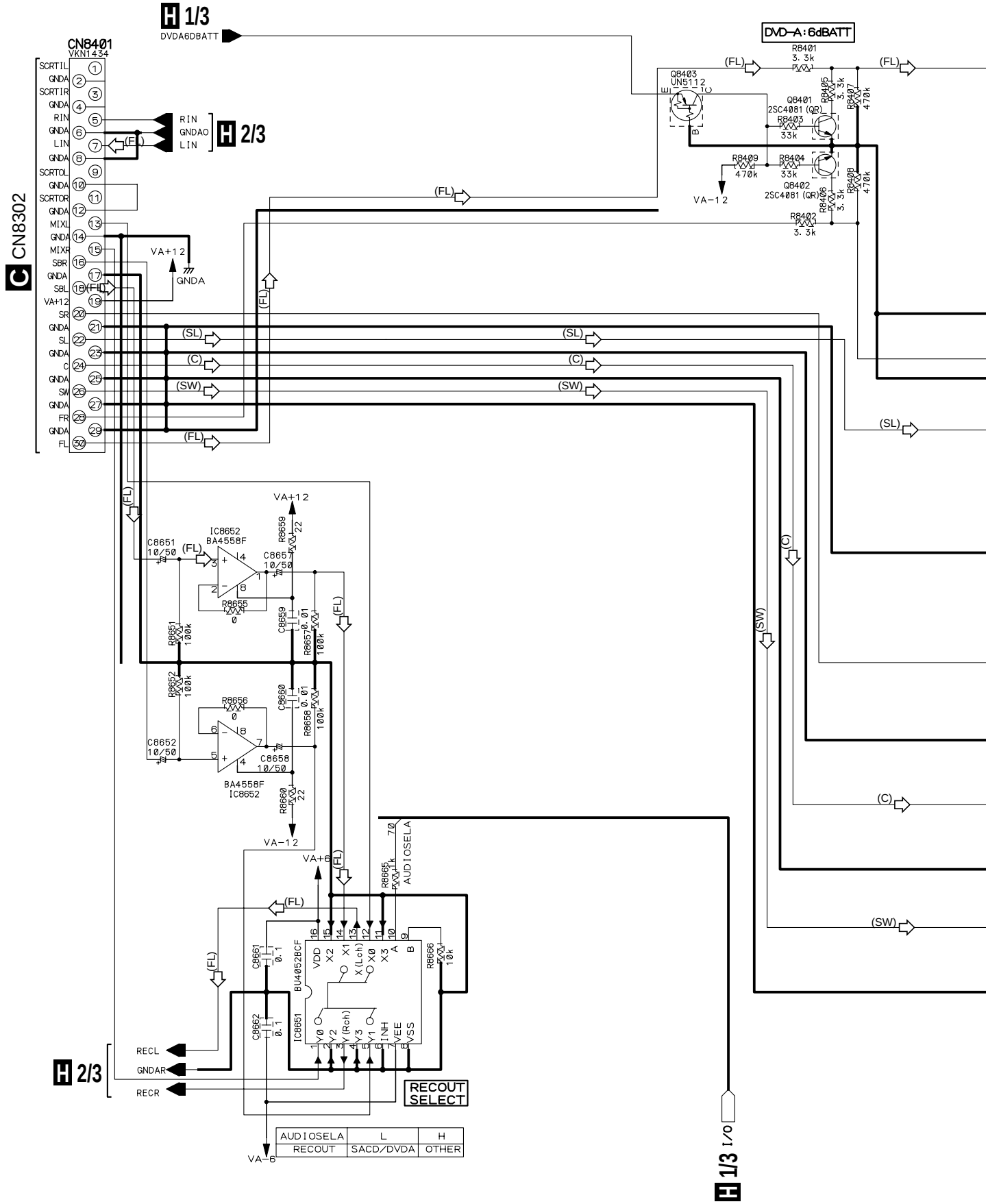
	WSELA	WSELB
MUTE	L	L
REAR	H	L
KITCHEN	L	H
MUTE	H	H

(FL) : AUDIO SIGNAL ROUTE (Front L ch)
(TV) : AUDIO SIGNAL ROUTE (TV L ch)
(L1) : AUDIO SIGNAL ROUTE (LINE 1 L ch)
(TX) : AUDIO SIGNAL ROUTE (Tuner L ch)

H 2/3 CONTROL ASSY (AWU8103)

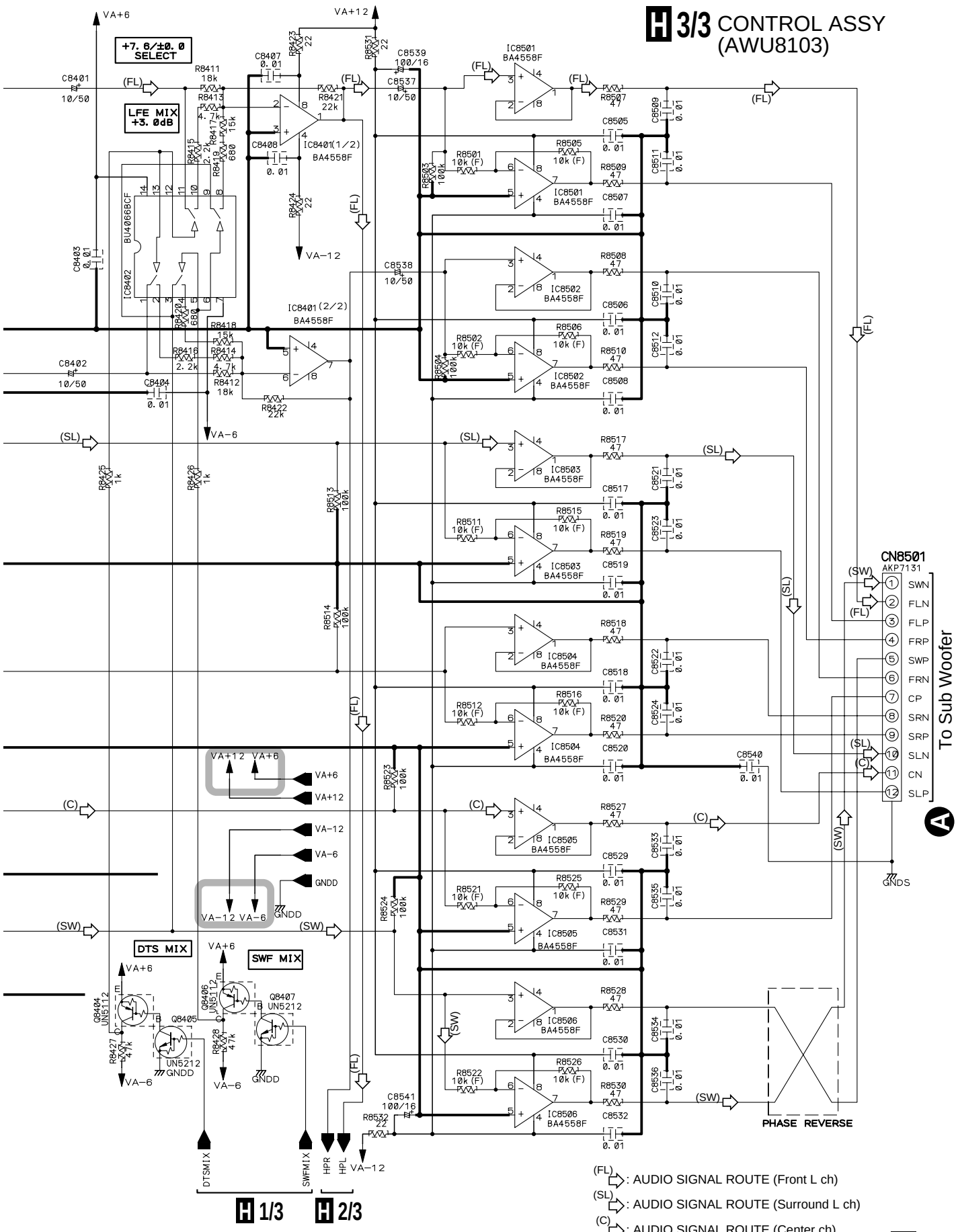


3.13 CONTROL ASSY(3/3)



H 3/3

H 3/3 CONTROL ASSY (AWU8103)



(FL): AUDIO SIGNAL ROUTE (Front L ch)
(SL): AUDIO SIGNAL ROUTE (Surround L ch)
(C): AUDIO SIGNAL ROUTE (Center ch)
(SW): AUDIO SIGNAL ROUTE (Sub Woofer ch)

: The power supply is shown with the marked box.

H 1/3 H 2/3

H 3/3

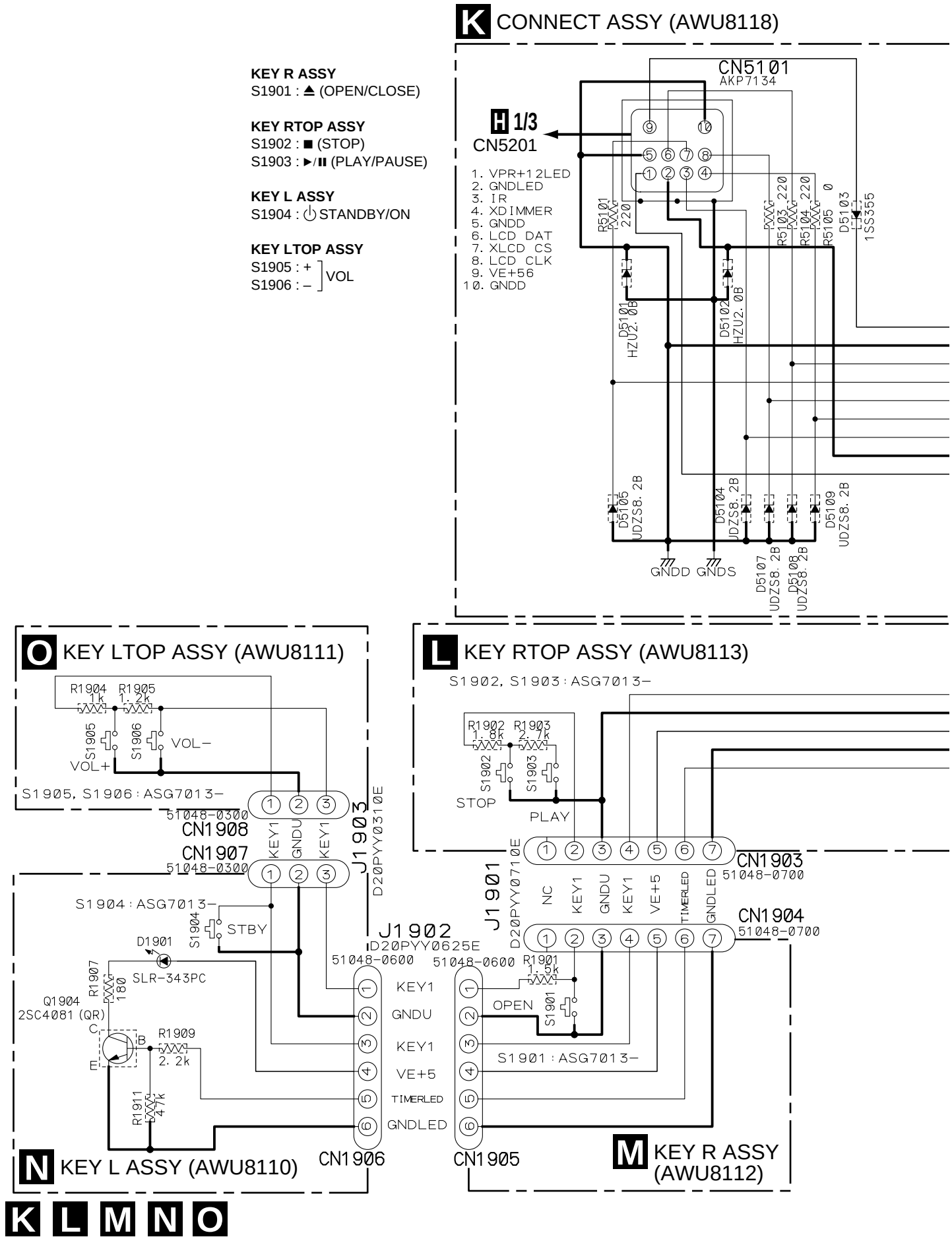
3.14 LCDCONT, CONNECT, KEY RTOP, KEY R, KEY L and KEY LTOP ASSYS

KEY R ASSY
S1901 : ⏏ (OPEN/CLOSE)

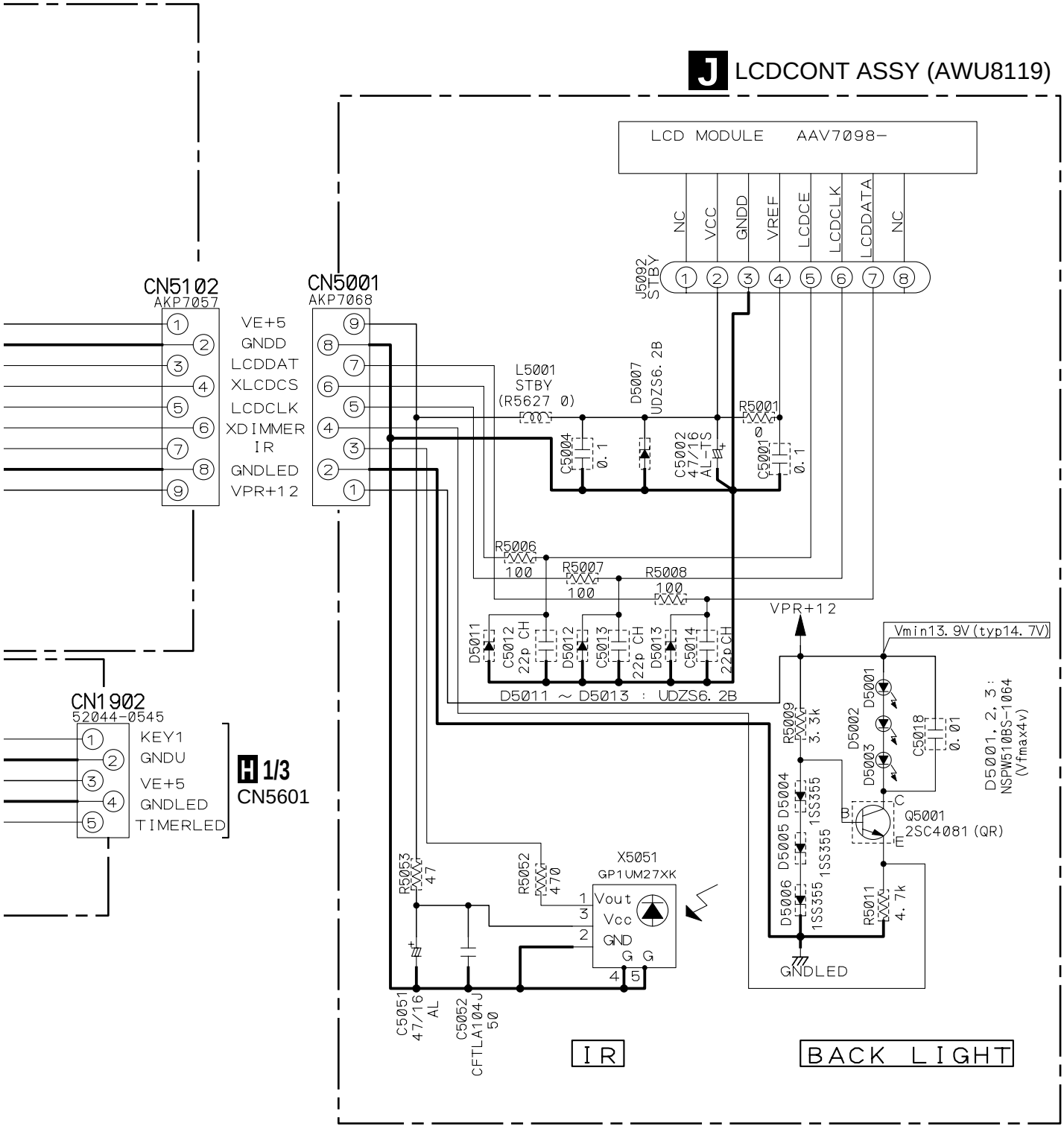
KEY RTOP ASSY
S1902 : ■ (STOP)
S1903 : ▶/❚❚ (PLAY/PAUSE)

KEY L ASSY
S1904 : ⏻ STANDBY/ON

KEY LTOP ASSY
S1905 : +] VOL
S1906 : –]



K L M N O


J LCDCONT ASSY (AWU8119)
LCD MODULE AAV7098-
NC
VCC
GNDD
VREF
LCDCE
LCDCLK
LCDDATA
NC
J5092
STBY
CN5102
AKP7057
CN5001
AKP7068
VE+5
GNDD
LCDDAT
XLCDCS
LCDCLK
XDIMMER
IR
GNDLED
VPR+12
L5001
STBY
(R5627 0)
D5007
UDZS6.2B
R5001
0
C5004
0.1
C5002
47/16
AL-TS
C5001
0.1
R5006
100
R5007
100
R5008
100
D5011
C5012
22p CH
D5012
C5013
22p CH
D5013
C5014
22p CH
D5011 ~ D5013 : UDZS6.2B
VPR+12
Vmin13.9V(typ14.7V)
R5009
3.3k
D5001
D5002
D5003
C5018
0.01
D5001,2,3:
NSPW510BS-1064
(Vfmax4v)
D5004
1SS355
D5005
1SS355
D5006
1SS355
Q5001
2SC4081(QR)
R5011
4.7k
GNDLED
CN1902
52044-0545
KEY1
GNDU
VE+5
GNDLED
TIMERLED
H 1/3
CN5601
R5053
47
R5052
470
X5051
GP1UM27XK
Vout
Vcc
GND
C5051
47/16
AL
C5052
CFTLA104J
50
IR
BACK LIGHT

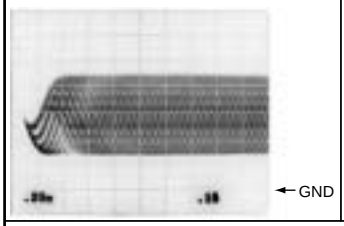
3.15 WAVEFORMS

Note : The encircled numbers denote measuring point in the schematic diagram.

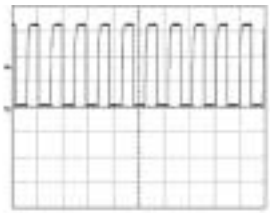
B DVDM ASSY

Measurement condition ; No. 1, 2 and 12 to 17 : MJK1, Title 1-chp 1
No. 8 : CD, ABEX-784 Track 1
No. 13, 14 and 17 : DVD-REF-A1, T2-Chap.1
No. 3 to 5 : DVD-REF-A1, T2-Chap.19

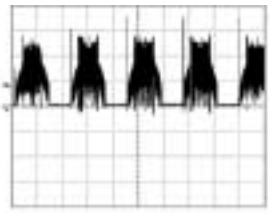
1 **IC301 - pin 4 [RFOUT]**
V: 200mV/div. H: 0.1µsec/div.



2 **IC301 - pin 36 [FG]**
V: 1V/div. H: 5msec/div.



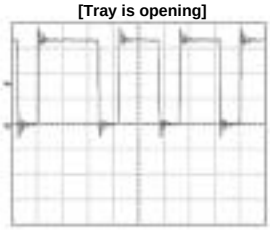
3 **IC101 - pin 14 [A1], 13 [A2], 12 [A3]**
V: 2V/div. H: 2msec/div.



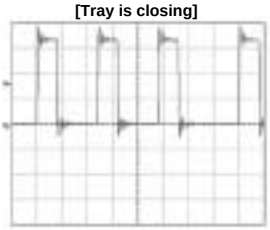
4 **IC301 - pin 55 [LOAD_DRV]**
V: 1V/div. H: 500nsec/div.

[Tray stops]

[Tray is opening]

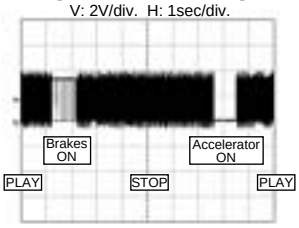


[Tray is closing]

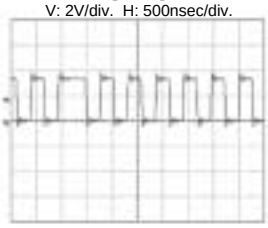


5 **IC301 - pin 44 [SPDL_PDM]**

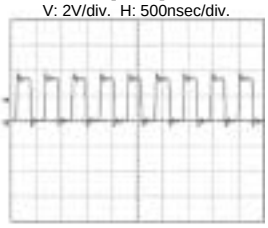
[PLAY → STOP → PLAY]
V: 2V/div. H: 1sec/div.



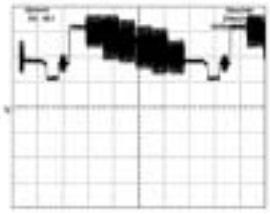
[PLAY]
V: 2V/div. H: 500nsec/div.



[STOP]
V: 2V/div. H: 500nsec/div.

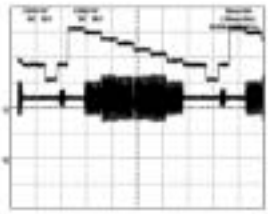


6 **IC501 - pin 23 [Composite Video out]**
V: 1V/div. H: 10µsec/div.



7 **IC501 - pin 21 [S Video out-Y]**
V: 1V/div. H: 10µsec/div.

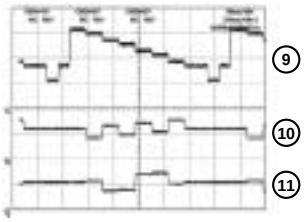
8 **IC501 - pin 26 [S Video out-C]**
V: 1V/div. H: 10µsec/div.



9 **IC501 - pin 20 [Component Video out-Y]**
V: 1V/div. H: 10µsec/div.

10 **IC501 - pin 18 [Component Video out-Pb]**
V: 2V/div. H: 10µsec/div.

11 **IC501 - pin 16 [Component Video out-Pr]**
V: 2V/div. H: 10µsec/div.



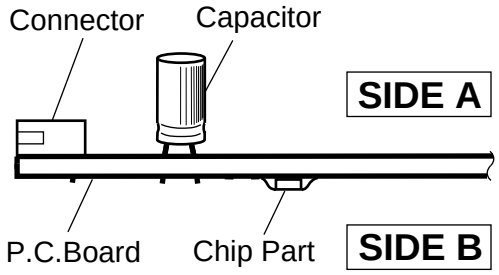
4. PCB CONNECTION DIAGRAM

NOTE FOR PCB DIAGRAMS :

1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

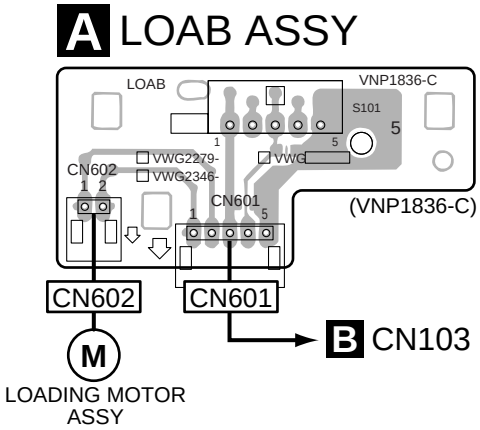
Symbol In PCB Diagrams	Symbol In Schematic Diagrams	Part Name
B C E	B C E B C E	Transistor
B C E	B C E B C E	Transistor with resistor
D G S	D G S D G S	Field effect transistor
		Resistor array
		3-terminal regulator

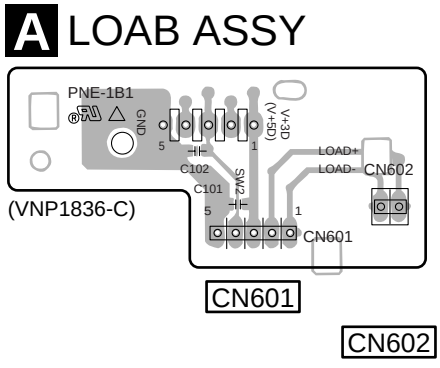
3. The parts mounted on this PCB include all necessary parts for several destinations.
   For further information for respective destinations, be sure to check with the schematic diagram.
4. View point of PCB diagrams.



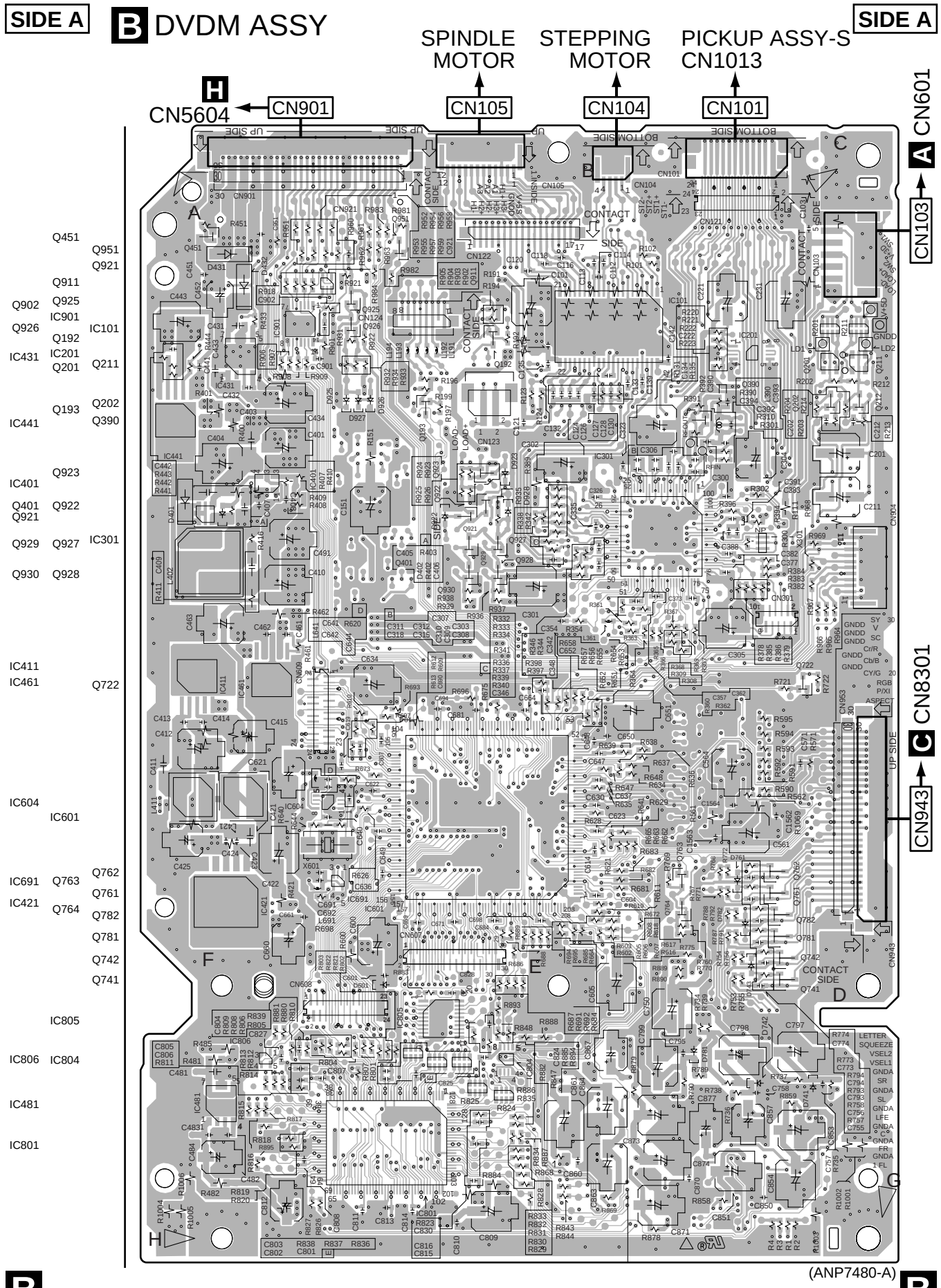
4.1 LOAB ASSY

SIDE A **SIDE B**





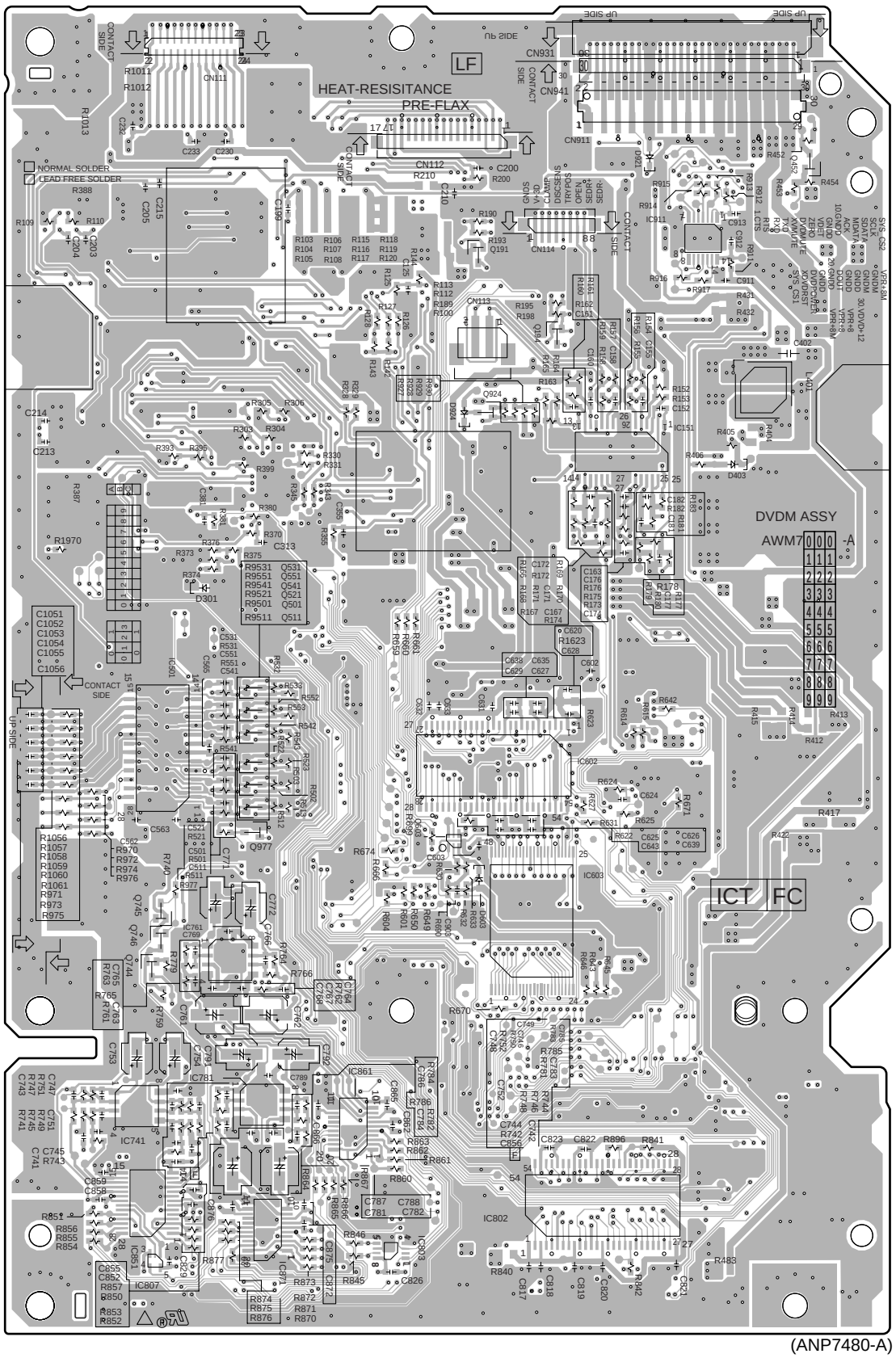
4.2 DVDM ASSY


SIDE A
B DVDM ASSY
SIDE A
SPINDLE MOTOR
STEPPING MOTOR
PICKUP ASSY-S
CN1013
H
CN5604
CN901
CN105
CN104
CN101
A CN601
CN103
C CN8301
CN943
UP SIDE
CONTACT SIDE
BOTTOM SIDE
Q451
Q951
Q921
Q911
Q902
Q925
IC901
Q926
IC101
Q192
IC431
IC201
Q201
Q211
Q193
Q202
IC441
Q390
Q923
IC401
Q401
Q922
Q921
Q929
Q927
IC301
Q930
Q928
IC411
IC461
Q722
IC604
IC601
Q762
IC691
Q763
Q761
IC421
Q764
Q782
Q781
Q742
Q741
IC805
IC806
IC804
IC481
IC801
(ANP7480-A)

SIDE B

SIDE B

B DVDM ASSY

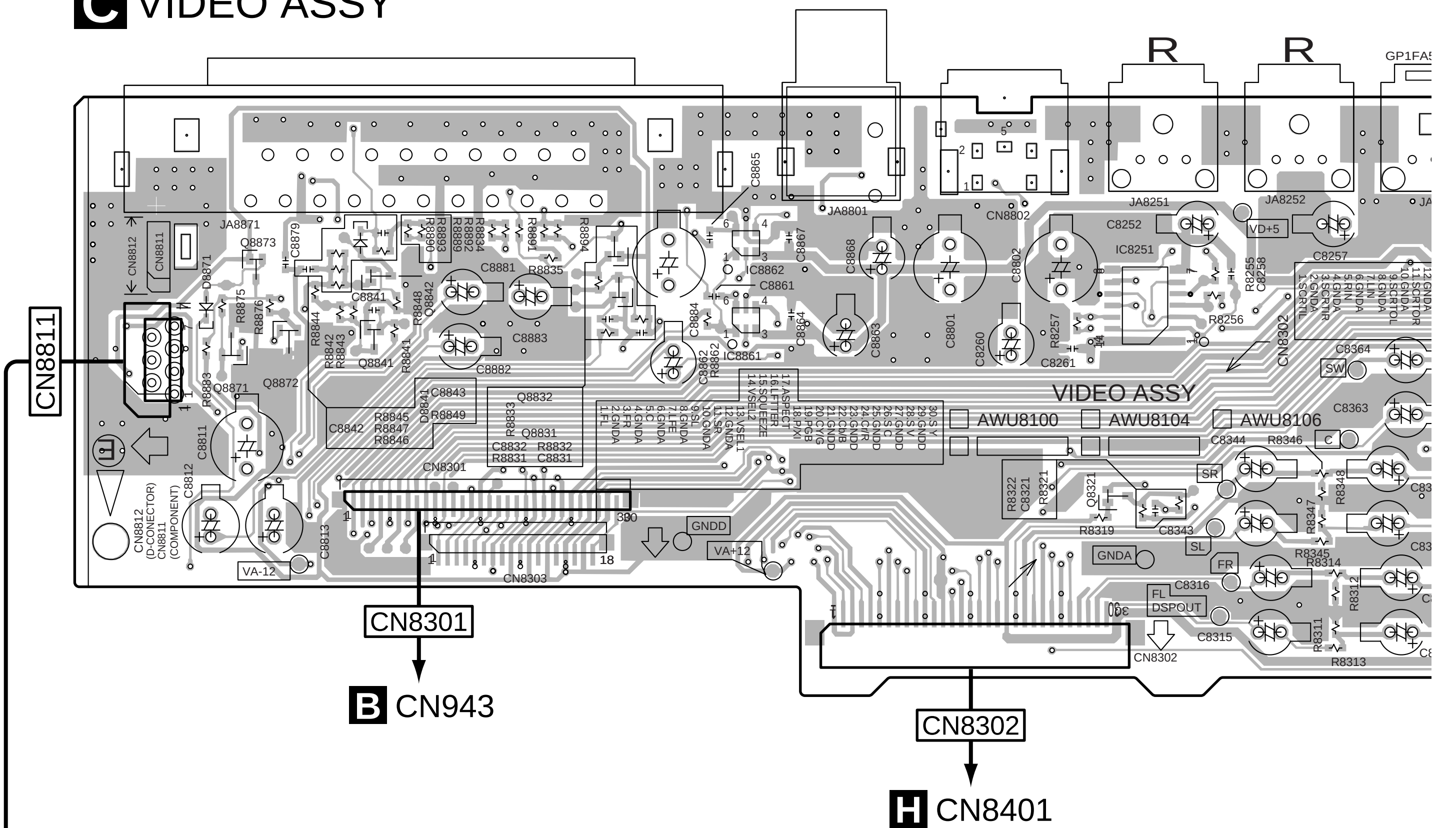


(ANP7480-A)

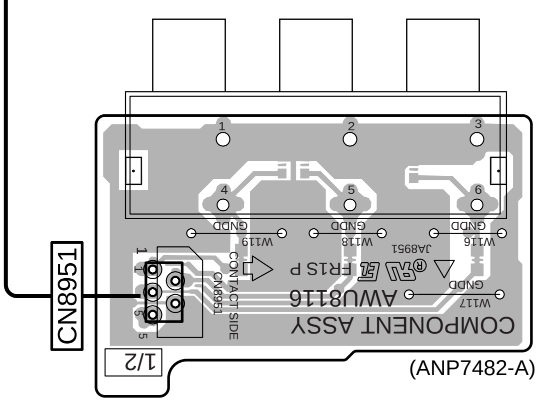
4.3 VIDEO, DSP TRADE and COMPONENT ASSYS

SIDE A

C VIDEO ASSY



P COMPONENT ASSY

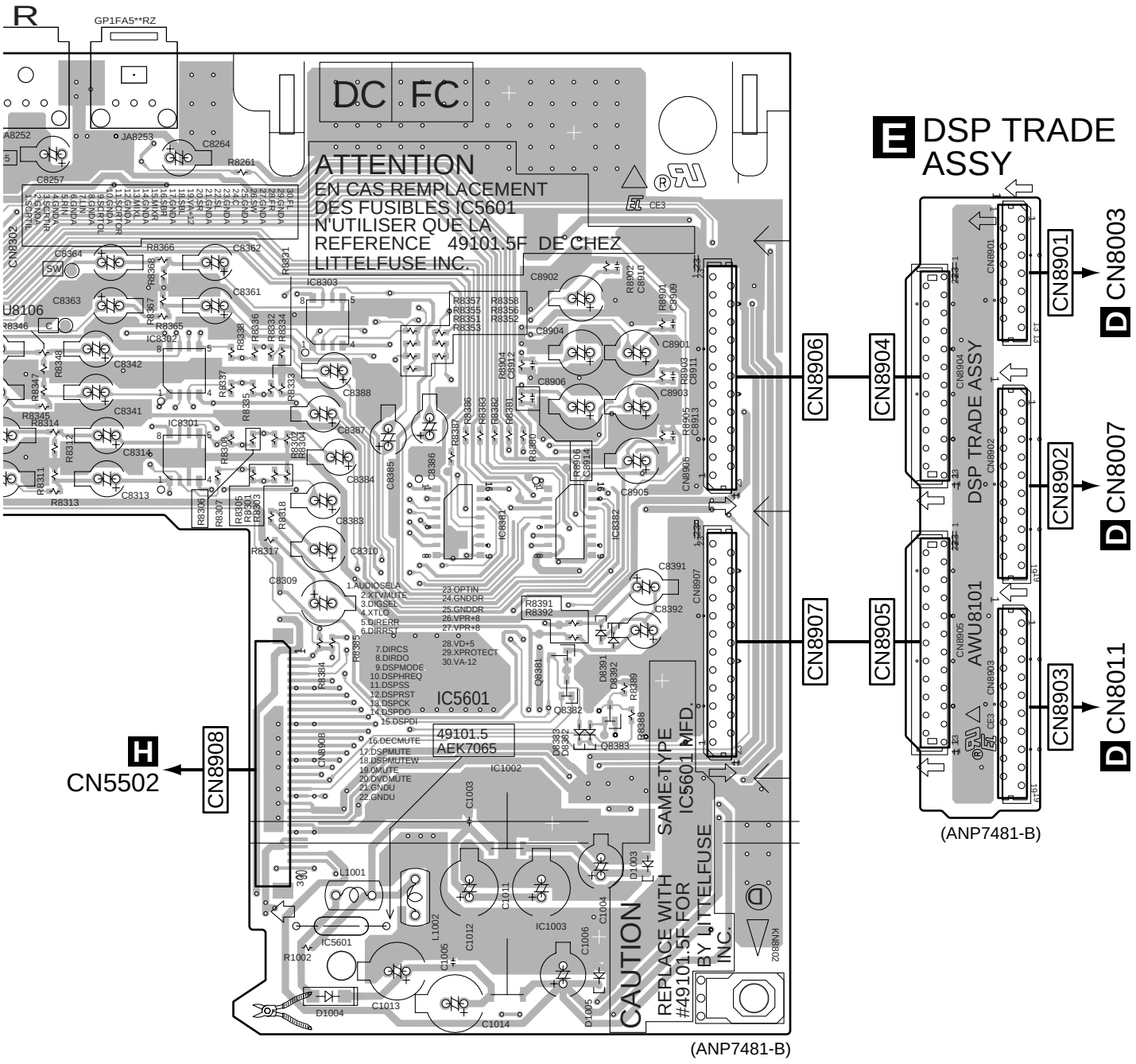


(ANP7482-A)

Q8873	Q8842	Q8832	IC8862	IC8251	
Q8871 Q8872	Q8841	Q8831	IC8861	Q8321	

C P

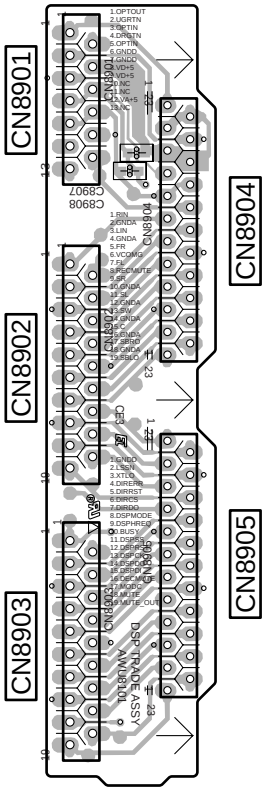
SIDE A



IC8302 IC8303
IC8301 IC8381 IC8382
Q8381
Q8382
IC5601 IC1003 Q8383

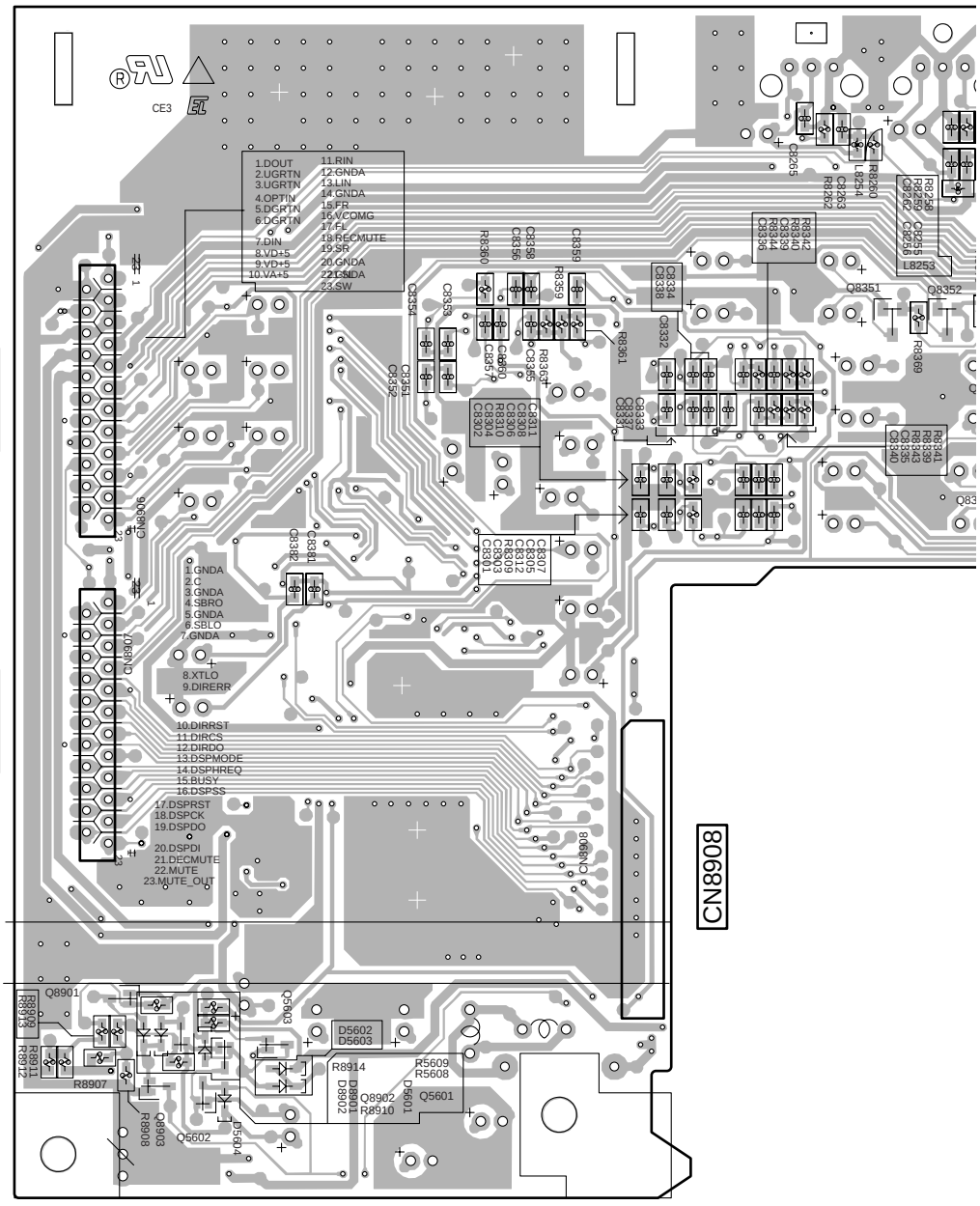
SIDE B

E DSP TRADE ASSY

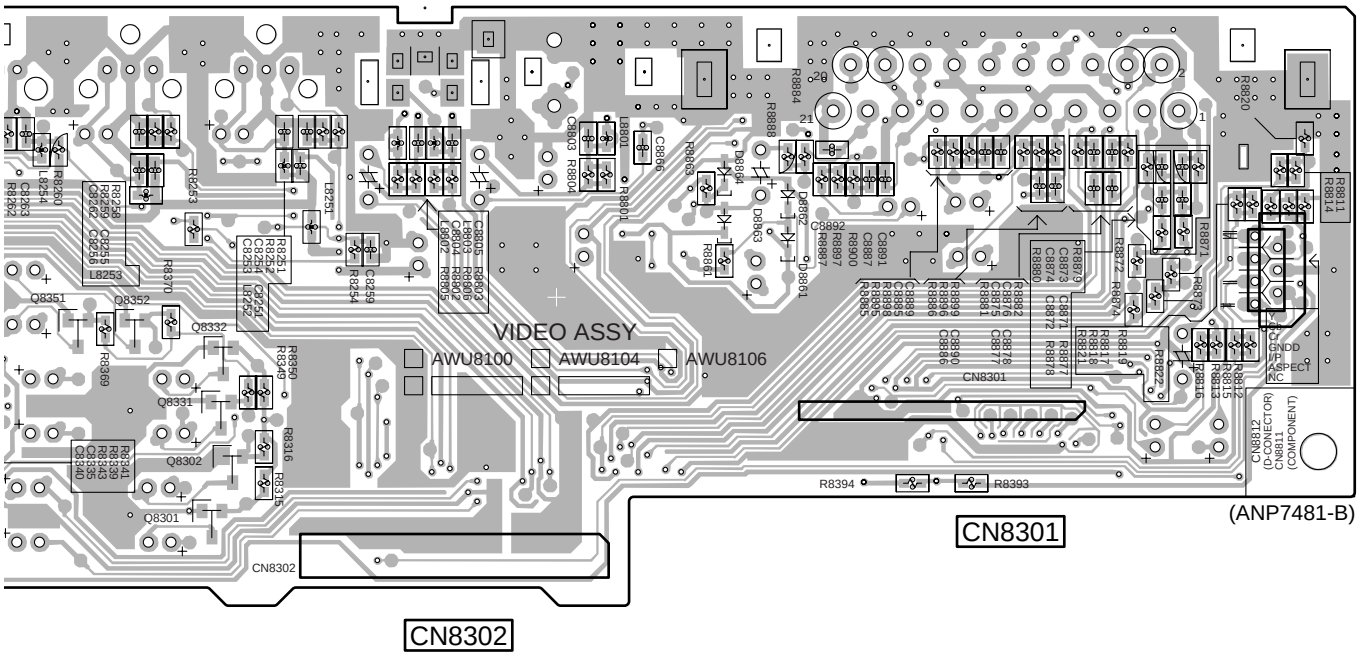


(ANP7481-B)

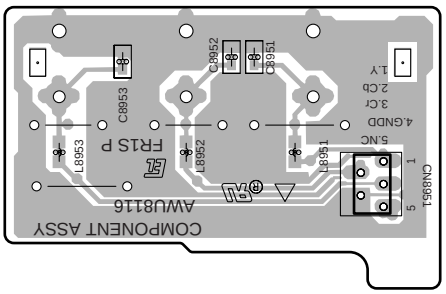
C VIDEO ASSY



SIDE B



P COMPONENT ASSY



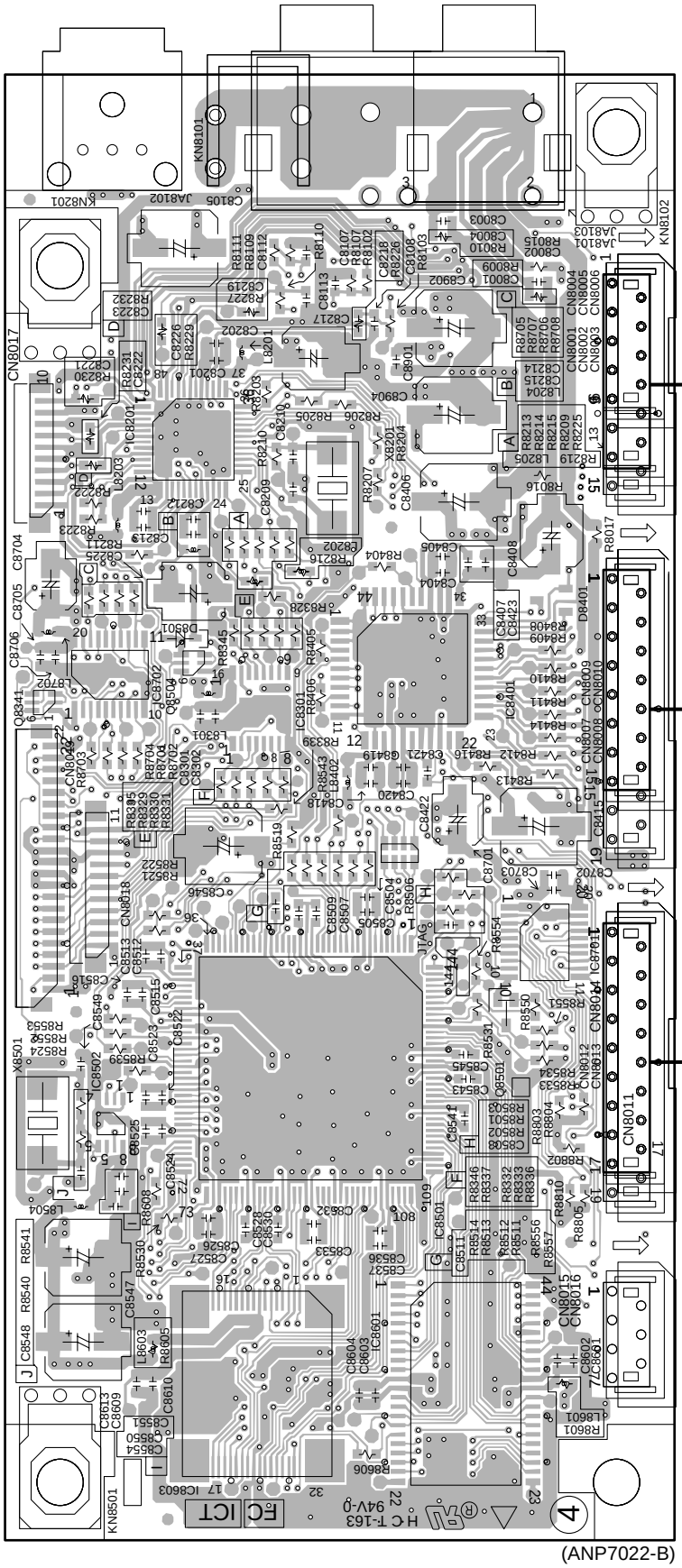
Q8351 Q8352
Q8332
Q8331
Q8302
Q8301

4.4 DSP ASSY

SIDE A

SIDE A

D DSP ASSY



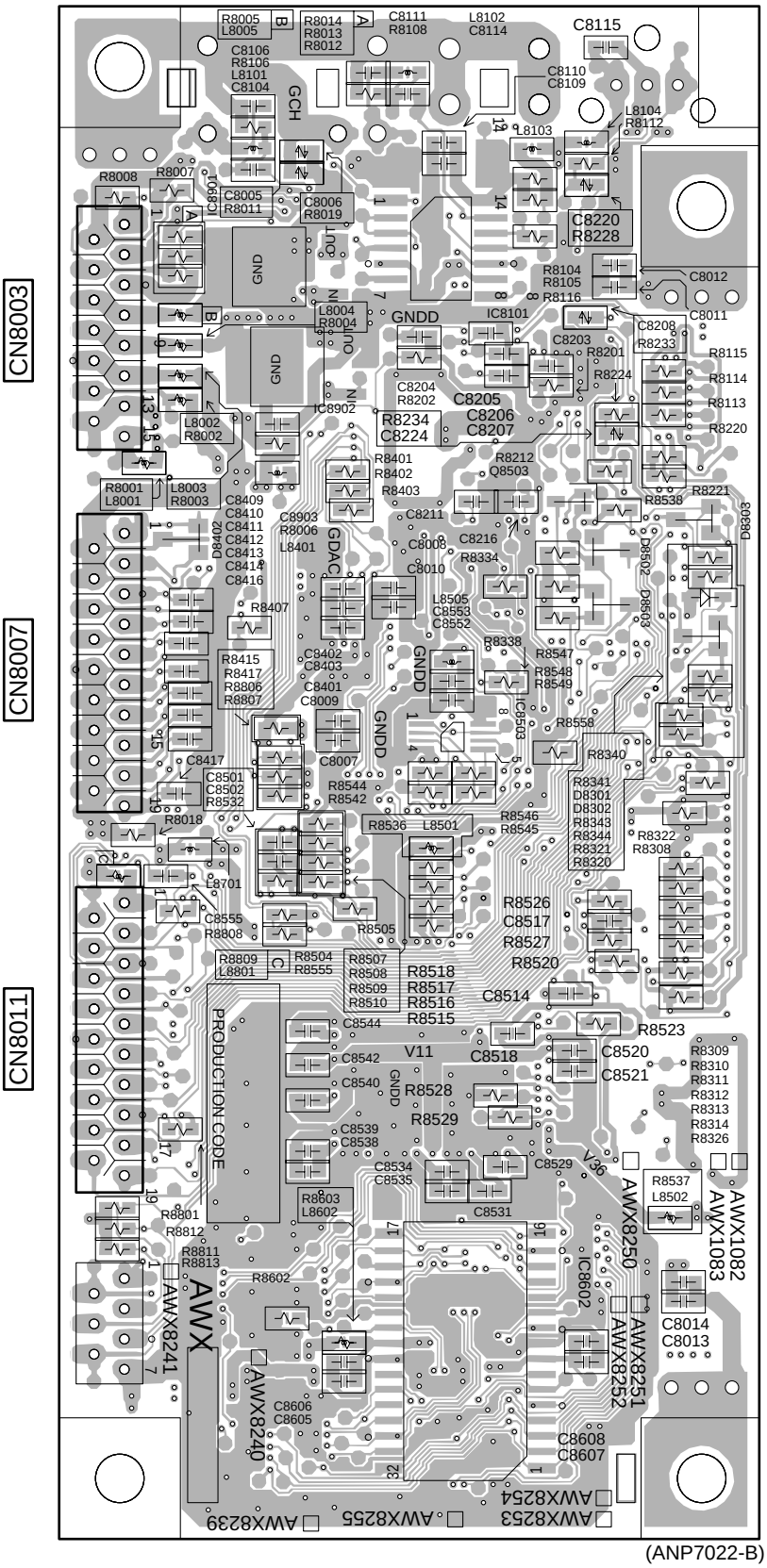
D

D

SIDE B

SIDE B

D DSP ASSY



(ANP7022-B)

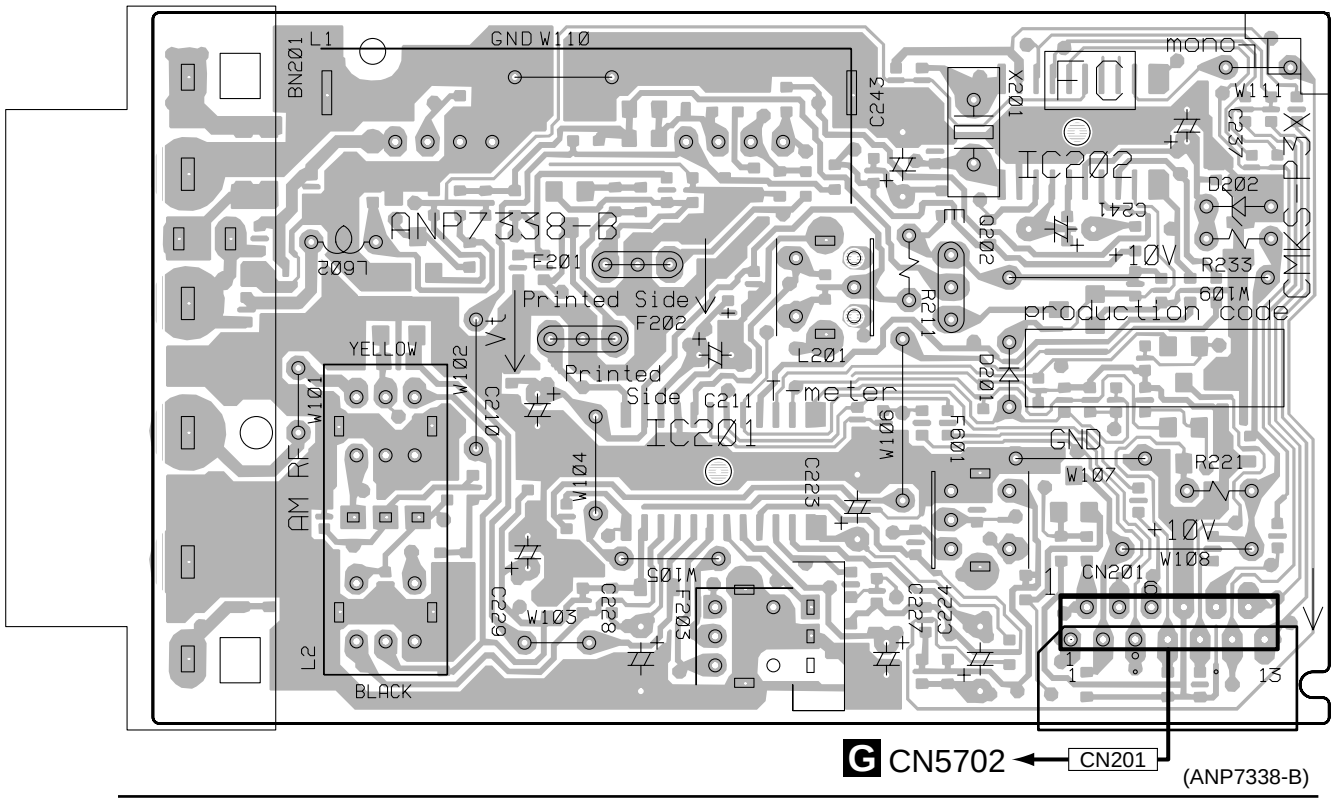
D D

4.5 FM/AM TUNER MODULE

SIDE A

SIDE A

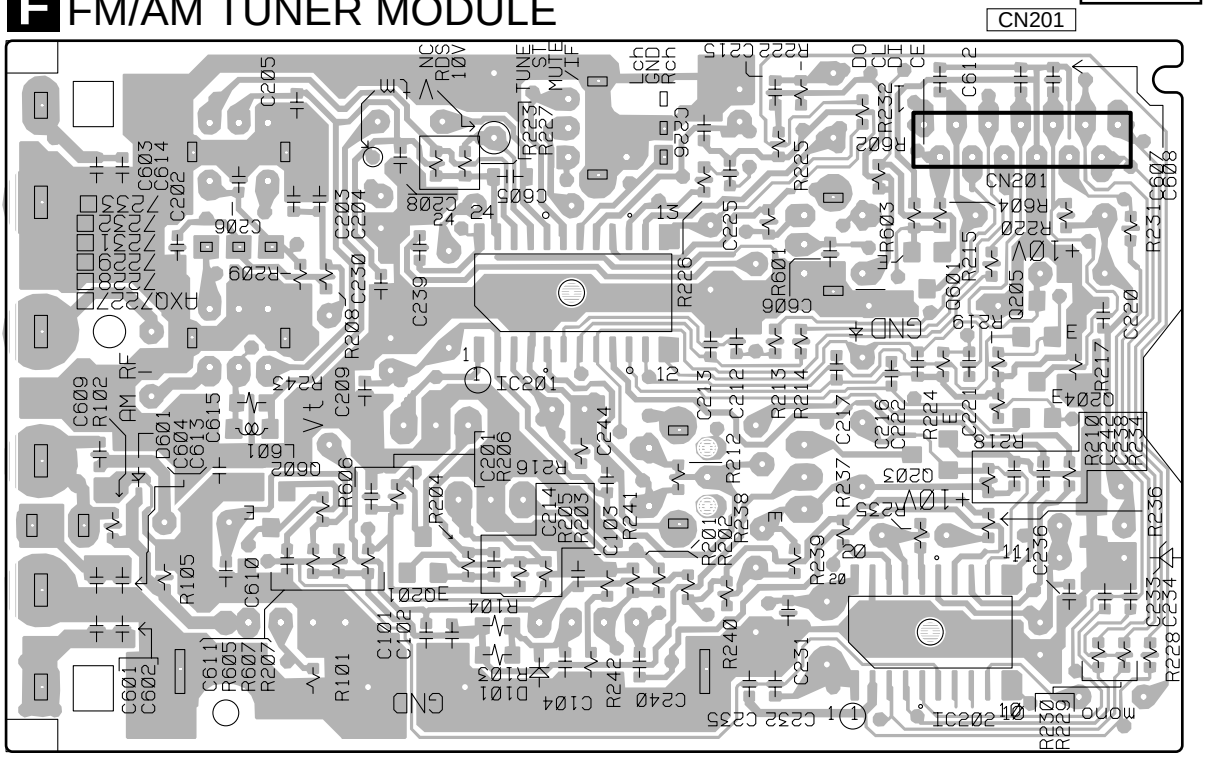
F FM/AM TUNER MODULE



SIDE B

SIDE B

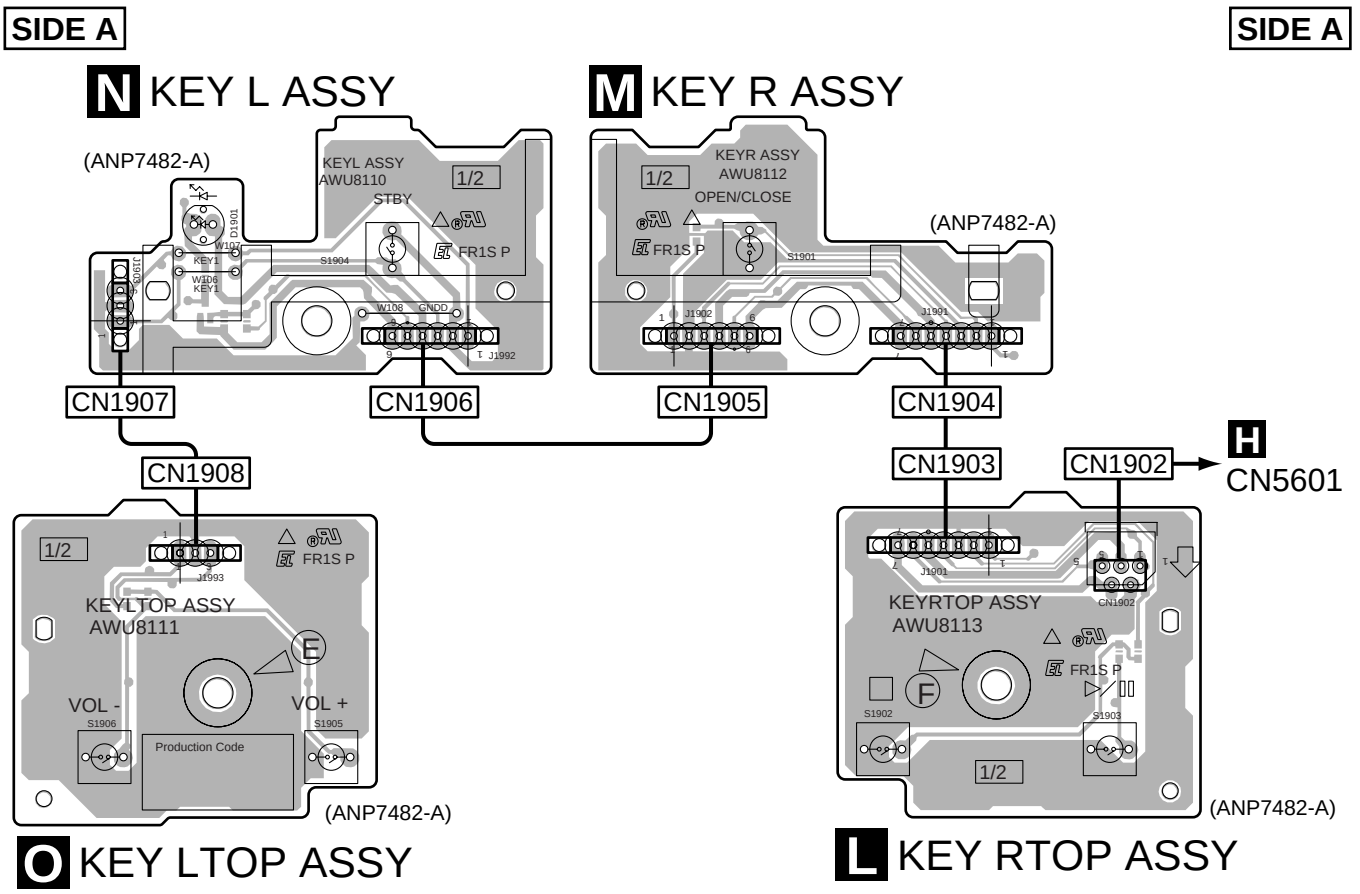
F FM/AM TUNER MODULE

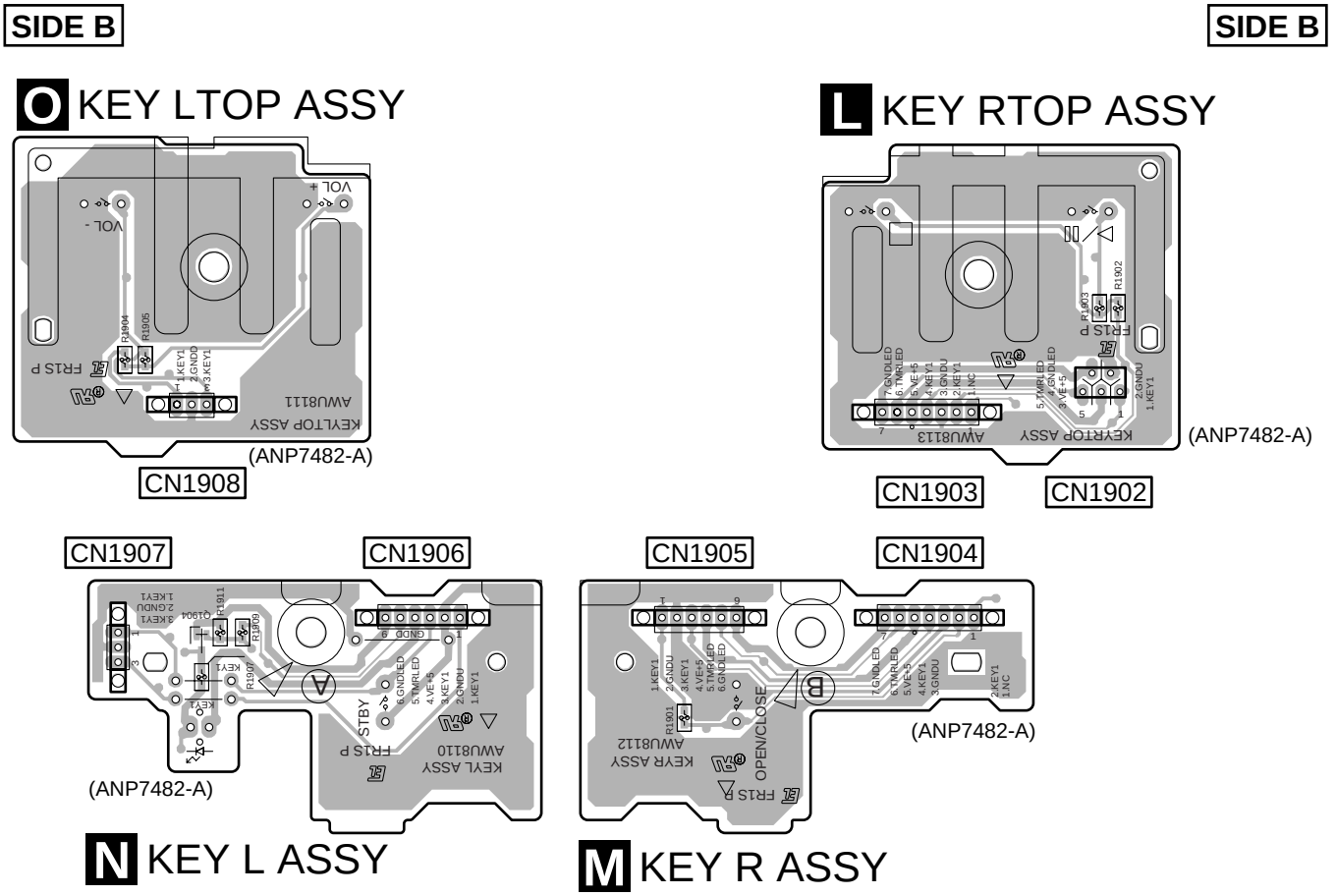


F

F

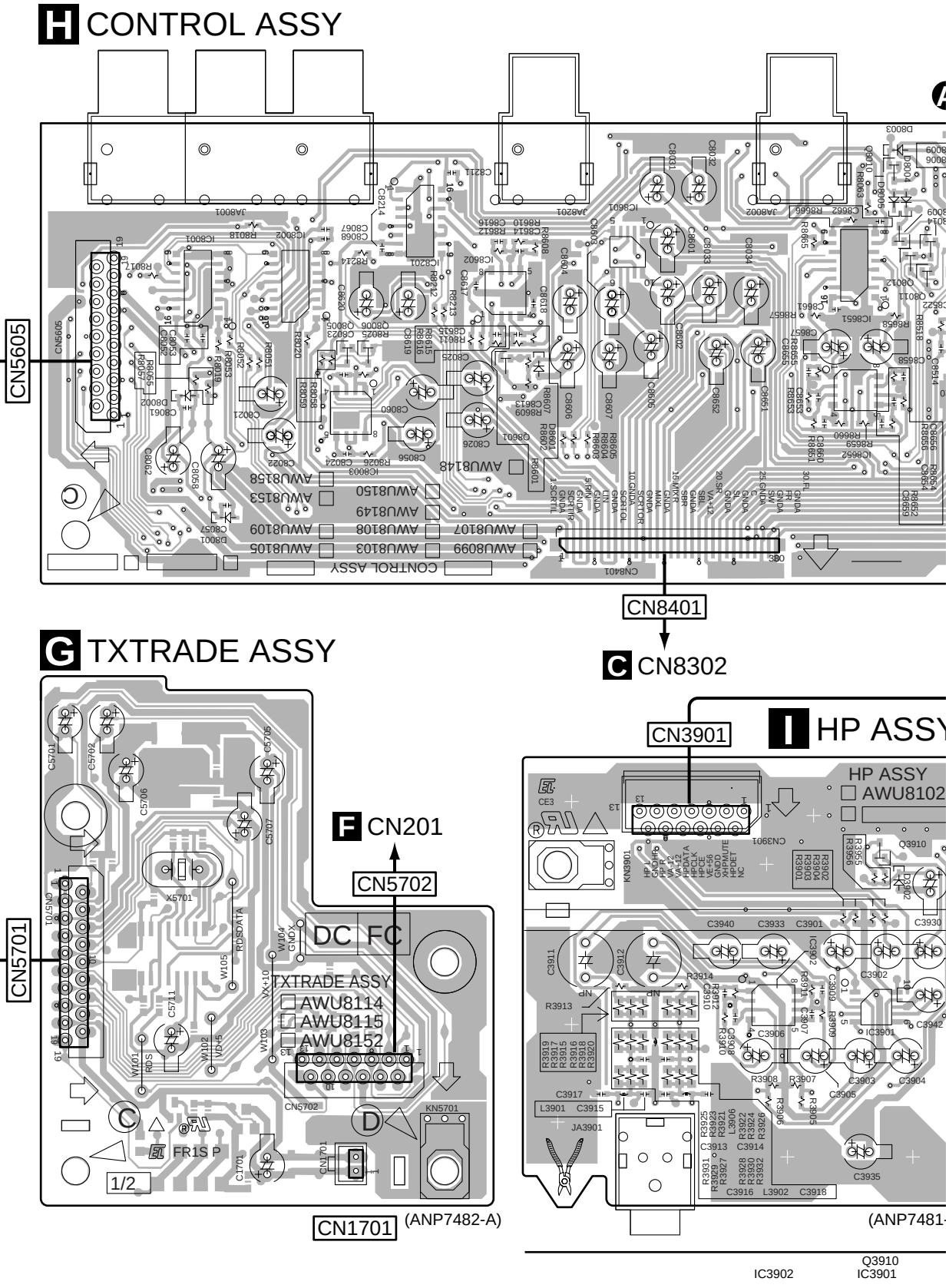
4.6 KEY RTOP, KEY R, KEY L and KEY LTOP ASSYS





4.7 TXTRADE, CONTROL and HP ASSYS

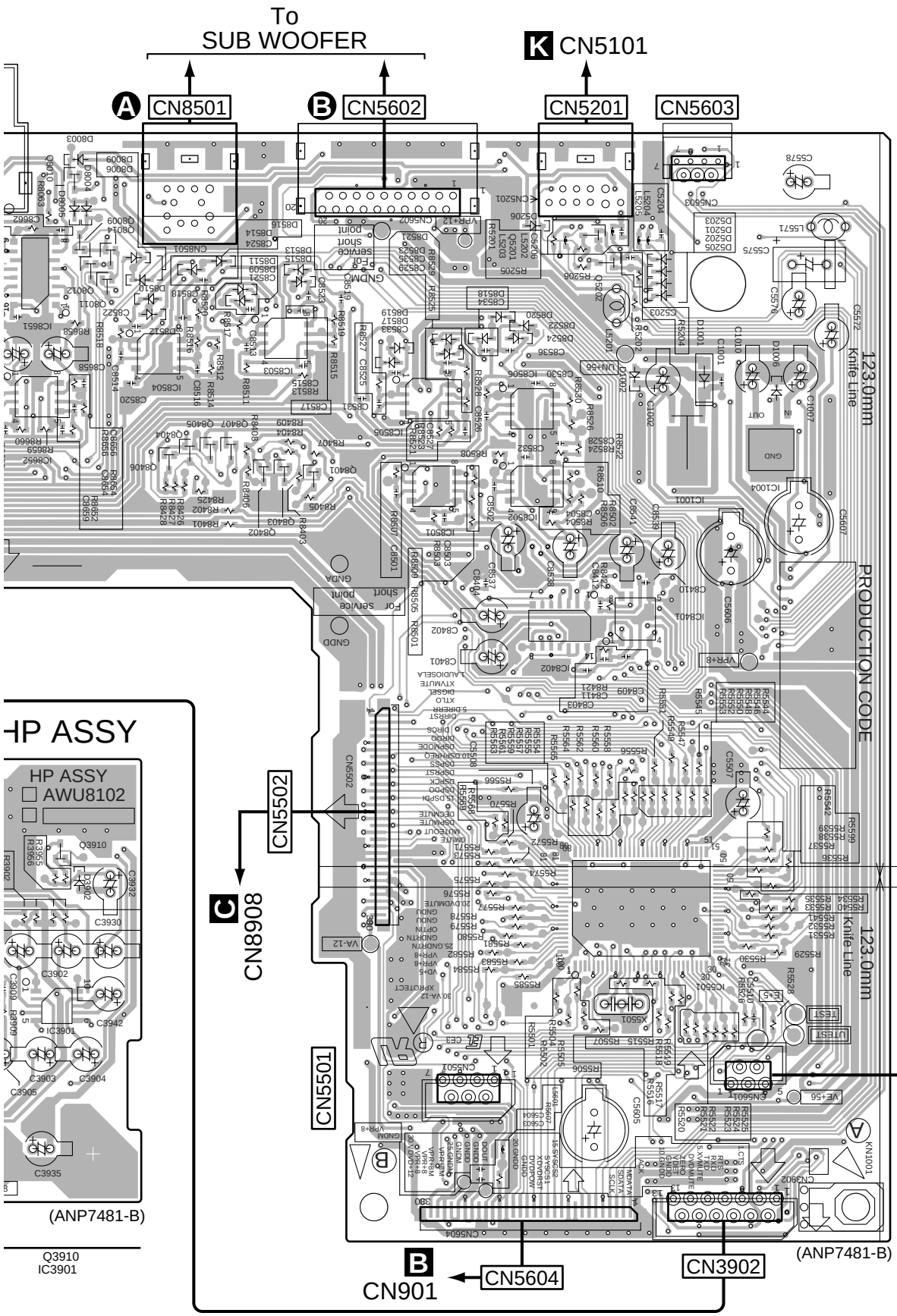
SIDE A



IC8001 IC8002 IC8201 IC8602 IC8601 Q8010
Q8005 Q8006 Q8601 IC8651 Q8009 Q8014
IC8003 IC8652 Q8012 Q801

G H I

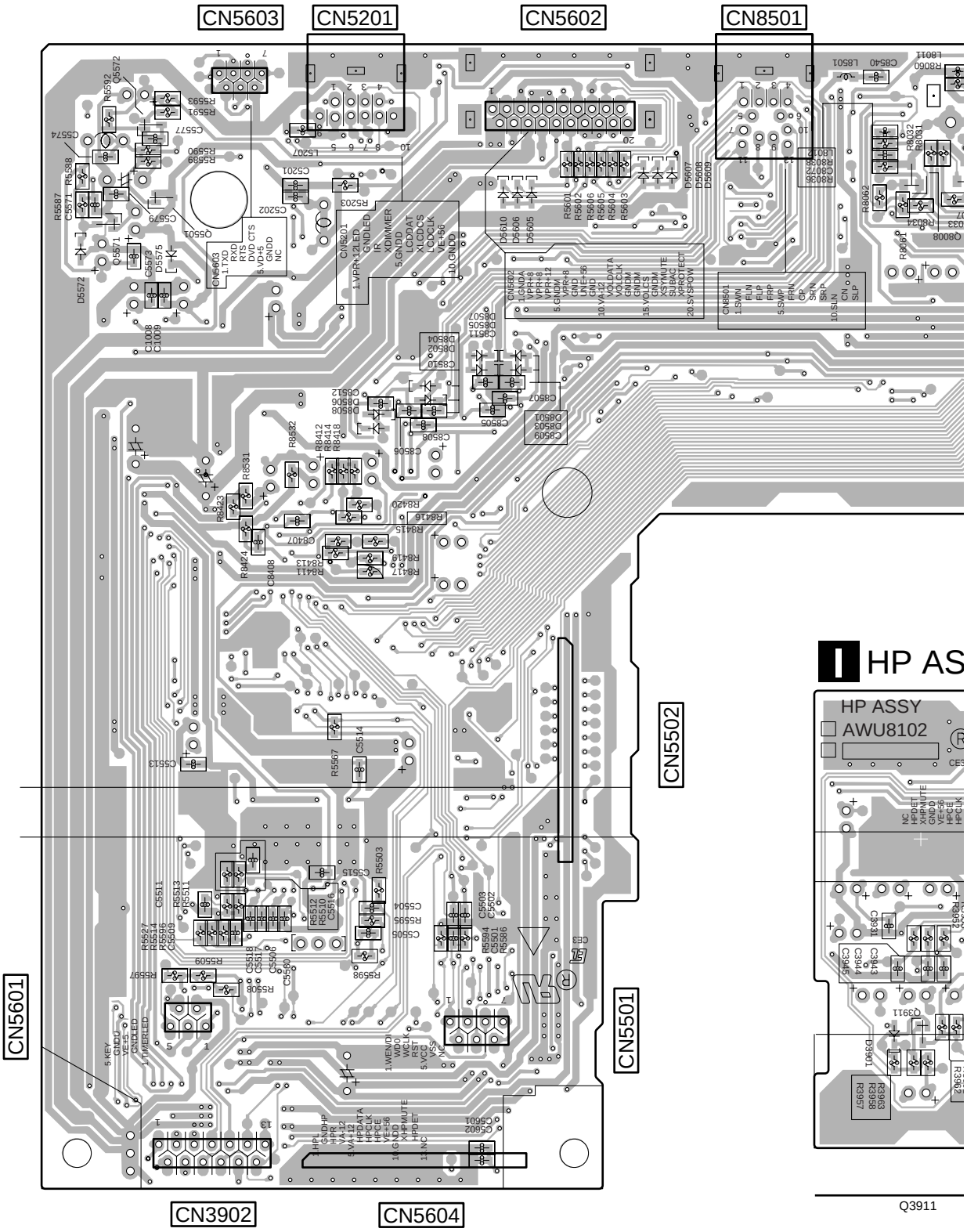
SIDE A



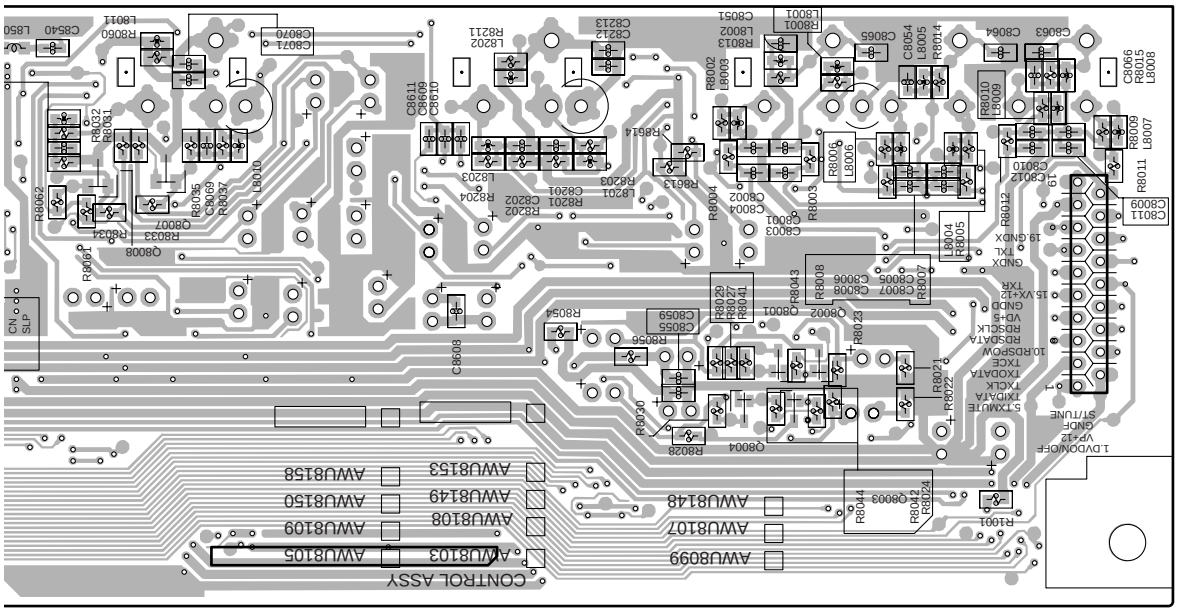
Q8010 IC8503 IC8505 IC8506 Q5201 IC1001 IC1004
IC8651 Q8009 Q8014 IC8504 IC8501 IC8502
IC8652 Q8012 Q8011 Q8404 Q8405 IC8402 IC8401
Q8406 Q8407 Q8402 Q8403 Q8401 IC5501

SIDE B

H CONTROL ASSY



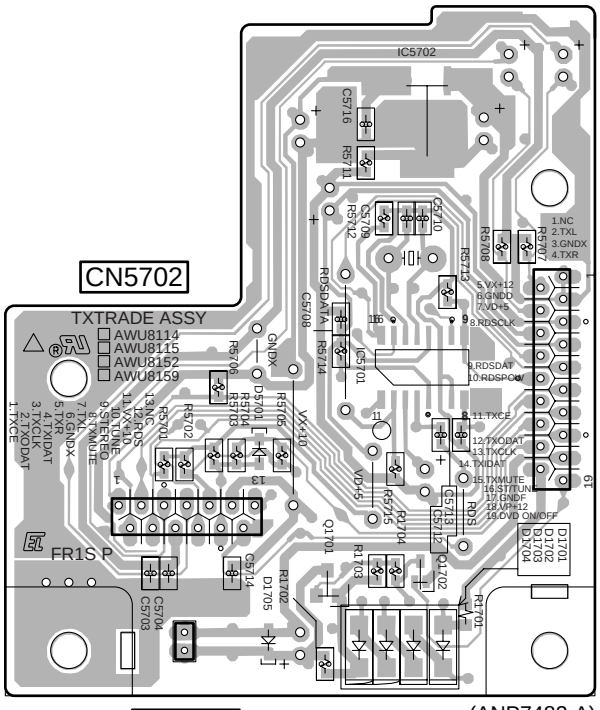
SIDE B



CN8401

(ANP7481-B)

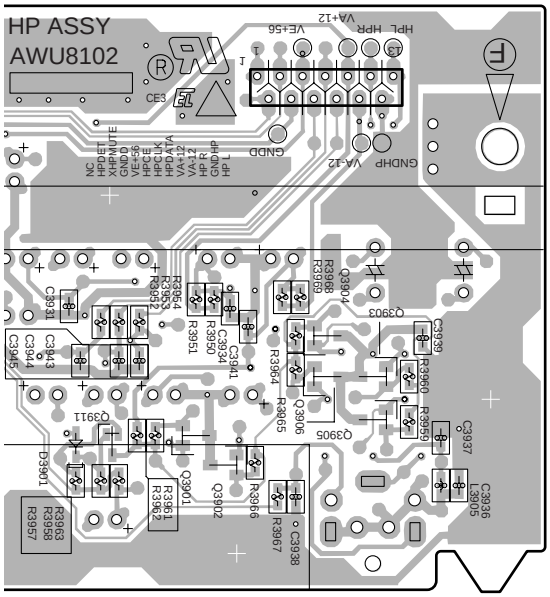
G TXTRADE ASSY



CN1701

(ANP7482-A)

I HP ASSY CN3901



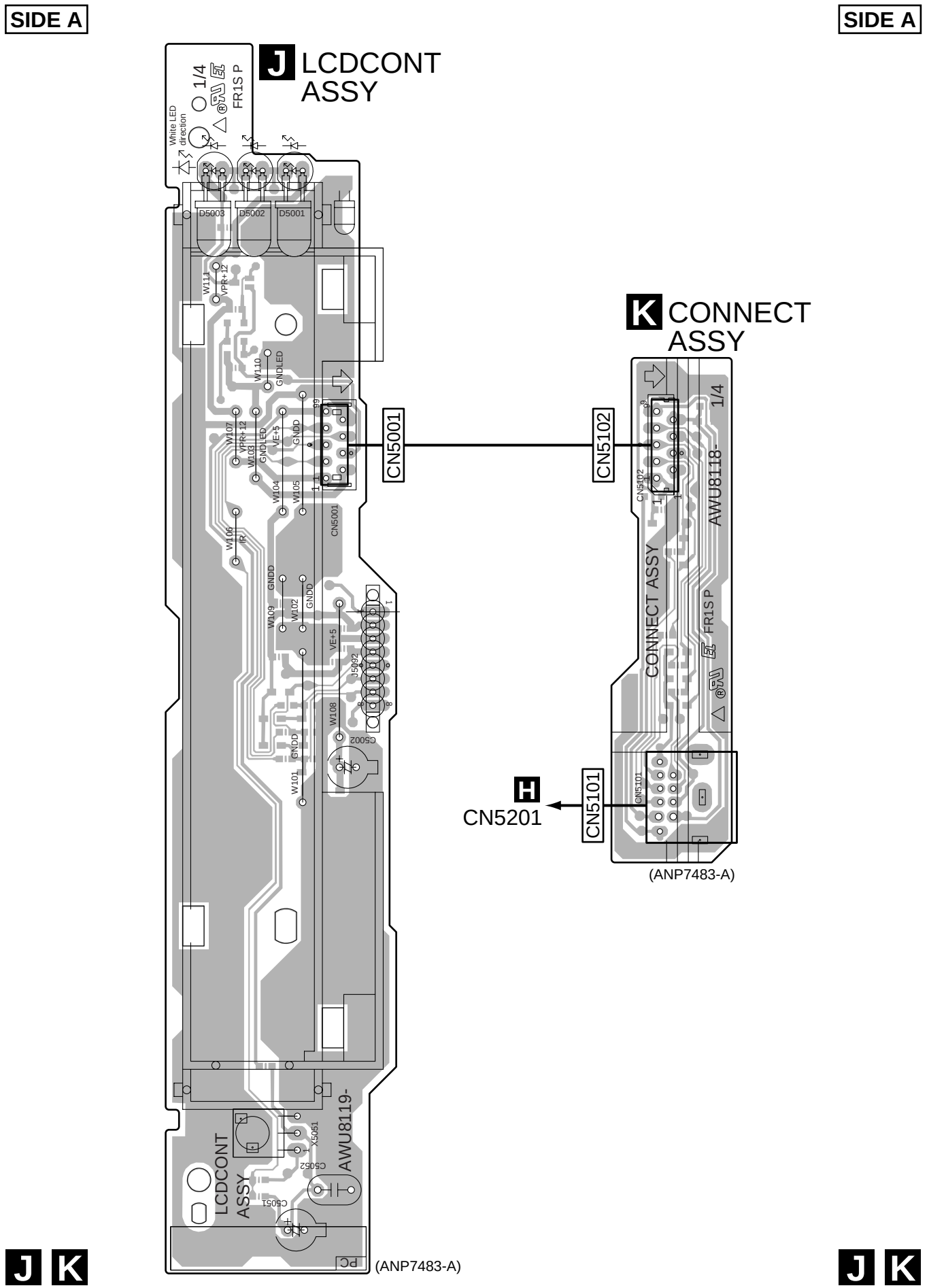
(ANP7481-B)

Q3911 Q3901 Q3904
Q3902 Q3905 Q3903
Q3906 Q3905

Q8008 Q8007

Q8001 Q8002
Q8004 Q8003

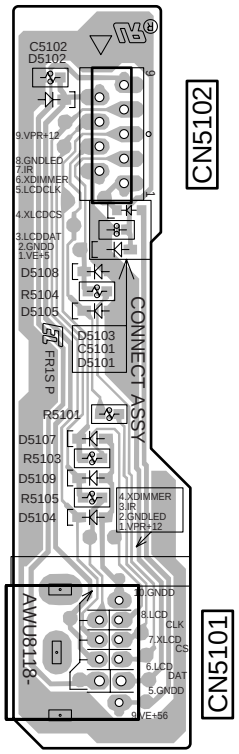
4.8 LCDCONT and CONNECT ASSYS



SIDE B

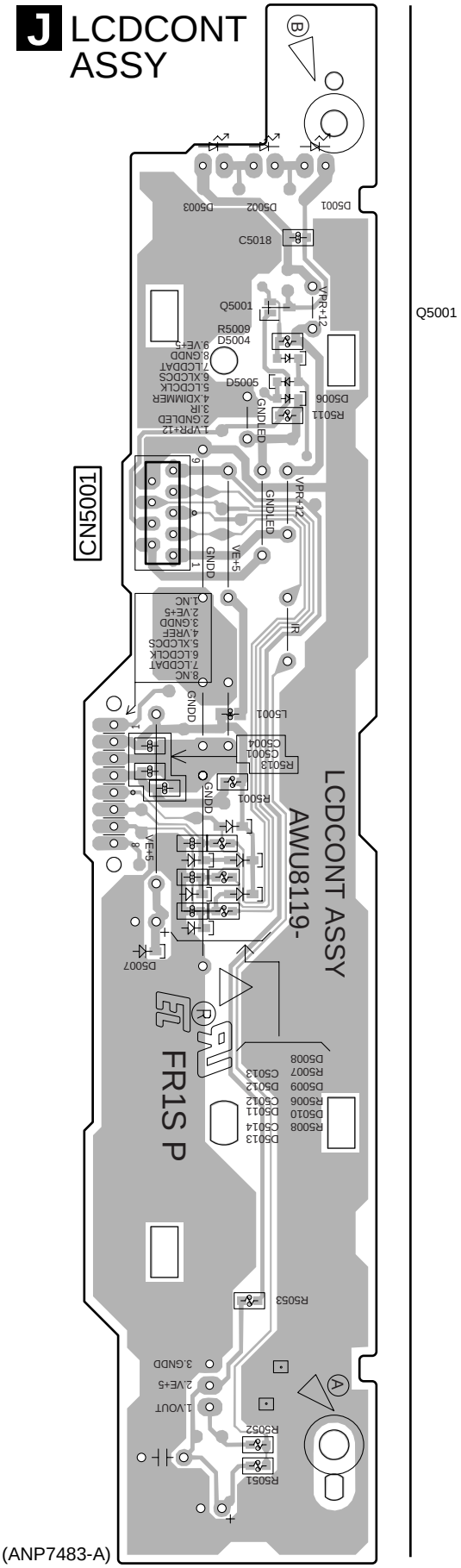
SIDE B

K CONNECT ASSY



(ANP7483-A)

J LCDCONT ASSY



(ANP7483-A)

5. PCB PARTS LIST

NOTES: ● *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
● *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
● *When ordering resistors, first convert resistance values into code form as shown in the following examples.*
Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560 Ω → 56 x 10[1] → 561 ..... RD1/4PU 5 6 1 J
47k Ω → 47 x 10[3] → 473 ..... RD1/4PU 4 7 3 J
0.5 Ω → R50 ..... RN2H R 5 0 K
1 Ω → 1R0 ..... RS1P 1 R 0 K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω → 562 x 10[1] → 5621 ..... RN1/4PC 5 6 2 1 F

LIST OF ASSEMBLIES

Mark	No.	Description	Part No.
NSP	1	..DVD ASSY	AXA7126
NSP	2	..LOADING MECHA ASSY	VWT1208
NSP	3	..LOAB ASSY	VWG2346
	2	..DVDM ASSY	AWM7813
NSP	1	..DVD COMP ASSY	AWM7845
	2	..VIDEO ASSY	AWU8104
	2	..DSPTRADE ASSY	AWU8101
	2	..CONTROL ASSY	AWU8103
	2	..HP ASSY	AWU8102
	1	..DSP ASSY	AWX8325
	1	..FM/AM TUNER MODULE	AXQ7228
	1	..DISPLAY UNIT	AXX7163
NSP	2	..DISPLAY ASSY	AWM7853
	3	..LCD CONT ASSY	AWU8119
	3	..CONNECT ASSY	AWU8118
NSP	1	..DVD SUB ASSY	AWM7851
	2	..TXTRADE ASSY	AWU8115
	2	..KEY R TOP ASSY	AWU8113
	2	..KEY R ASSY	AWU8112
	2	..KEY L ASSY	AWU8110
	2	..KEY L TOP ASSY	AWU8111
	2	..COMPONENT ASSY	AWU8116

Mark	No.	Description	Part No.

A LOAB ASSY

SWITCHES AND RELAYS

	S101	VSK1011

OTHERS

	CN602 KR CONNECTOR	S2B-PH-K
	CN601 KR CONNECTOR	S5B-PH-K
	PC BOARD LOAB	VNP1836

B DVDM ASSY

SEMICONDUCTORS

	IC741, IC761, IC781	BA4558F-HT
	IC861, IC871	DSD1702EG
	IC851	DSD1791DBR
	IC602	K4S281632D-TC75
	IC802	K4S641632F-TC75
	IC101	M63018FP
⚠	IC431	MM1565AF
	IC501	MM1623AF
⚠	IC421	PQ018EH01ZP
⚠	IC411	PQ018EZ01ZP
⚠	IC441	PQ20WZ11
⚠	IC401	R1224N102H
	IC801	SAA7893HL/C2
	IC601	STI5588CVB
	IC301	STM6316ATXXA
	IC911	TC74VHC08FT
	IC901	TC74VHCT125AFT
	IC807	TC7SET08FU
	IC691	TC7SU04FU
	IC803	TC7WH34FU
	IC604, IC804	TC7WU04FU
	IC603	VYW2087
	Q390	2SA1576A
⚠	Q451	2SA1576A
	Q744, Q764, Q923, Q924, Q926	2SA1576A
	Q202, Q212, Q452	2SC4081
	Q741, Q742, Q761, Q762	2SD2114K
	Q781, Q782	2SD2114K
⚠	Q401	CPH6314
	921	DTA124EUA
	Q951	DTC114TUA
	Q722, Q746, Q763, Q977	DTC114YUA
	Q922, Q925	DTC124EUA
	Q201, Q211	HN1A01F
	Q911	RN1903
	Q603	RN4982
	D431, D432	1SR154-400
	D402, D403, D743, D761, D782	1SS355
	D922-D927	1SS355
	D401	RB051L-40
	D603	RB501V-40
	D921	UDZS4.7B
	D741, D742, D781	UDZS6.2B

COILS AND FILTERS

	L401 POWER INDUCTOR	ATH7011
	L402 POWER INDUCTOR	CTH1254
	L413, L414 CHIP BEADS	ATL7010
	L390	LCYA2R7J2520
	L1056-L1061 CHIP BEADS	VTL1078

CAPACITORS

	C408, C747, C748, C751, C752	CCSRCH121J50
	C390	CCSRCH180J50
	C142	CCSRCH221J50

Mark No.	Description	Part No.
	C765, C766, C785, C786	CCSRCH270J50
	C200, C763, C764, C783, C784	CCSRCH331J50
	C690	CCSRCH470J50
	C755, C756, C773, C774	CCSRCH471J50
	C793, C794	CCSRCH471J50
	C392	CCSRCH560J50
	C393, C640, C644	CCSRCH7R0D50
	C452, C753, C754, C771, C772	CEVW100M16
	C791, C792	CEVW100M16
	C101, C401, C404, C410, C412	CEVW101M16
	C422, C443, C561, C564, C600	CEVW101M16
	C750, C797-C799, C809, C851	CEVW101M16
	C853, C854, C861, C863, C864	CEVW101M16
	C871, C873, C874	CEVW101M16
	C415, C425, C621, C660, C812	CEVW101M4
	C857	CEVW101M4
	C201, C211	CEVW470M16
	C761, C762, C781, C782, C867	CEVW470M6R3
	C877	CEVW470M6R3
	C406	CKSQYB104K25
	C431	CKSQYB105K16
	C433	CKSQYB225K10
	C127, C128, C381, C562, C563	CKSRYB102K50
	C624, C802, C810	CKSRYB102K50
	C112-C114, C124, C125, C130	CKSRYB103K50
	C133, C134, C355, C805	CKSRYB103K50
	C102, C132, C139, C300, C307	CKSRYB104K16
	C309, C315, C318, C323, C326	CKSRYB104K16
	C335, C342, C348, C357, C362	CKSRYB104K16
	C373, C377, C388, C391	CKSRYB104K16
	C413, C414, C423, C424	CKSRYB104K16
	C441, C442, C451, C511, C531	CKSRYB104K16
	C551, C565, C571, C604, C607	CKSRYB104K16
	C614, C619, C622, C623	CKSRYB104K16
	C626-C632, C636, C637, C641	CKSRYB104K16
	C647-C649, C659, C664, C671	CKSRYB104K16
	C681, C684, C691, C694, C698	CKSRYB104K16
	C741, C742, C749, C767-C769	CKSRYB104K16
	C787-C789, C801, C803, C804	CKSRYB104K16
	C806-C808, C811, C813-C826	CKSRYB104K16
	C829, C852, C855, C856	CKSRYB104K16
	C858, C859, C862, C865, C866	CKSRYB104K16
	C872, C875, C876, C902, C912	CKSRYB104K16
	C921	CKSRYB104K16
	C230, C232, C233, C501, C521	CKSRYB105K10
	C541, C603, C620, C625	CKSRYB105K10
	C757, C758, C795	CKSRYB105K10
	C394, C743-C746	CKSRYB152K50
	C126, C346	CKSRYB223K50
	C202, C205, C212, C215	CKSRYB472K50
	C402, C403, C405, C409 (10µF/16V)	DCH1165

RESISTORS

	R824, R825, R836-R838	RAB4C0R0J
	R201	RAB4C220J
	R211	RAB4C390J
	R100, R1011-R1013, R1069, R111	RS1/10S0R0J
	R210, R387-R389, R412, R415	RS1/10S0R0J
	R417, R421, R422, R483, R485	RS1/10S0R0J
	R561, R600, R623, R840, R884	RS1/10S0R0J
	R403	RS1/10S100J
	R105, R106, R115-R120	RS1/10S4R7J
	R104, R107	RS1/10S6R8J
	R125, R144, R330, R331, R628	RS1/16S1002F
	R635, R761-R764, R781-R784	RS1/16S1002F
	R301	RS1/16S1202F
	R502, R512, R522, R532, R542	RS1/16S1500F
	R552	RS1/16S1500F
	R408	RS1/16S1502F
	R410	RS1/16S1802F
	R443	RS1/16S2001F
	R741-R746, R751, R752	RS1/16S2201F
	R409	RS1/16S2702F
	R441	RS1/16S4701F
	R101, R102, R123, R142, R143	RS1/16S5600F
	R442	RS1/16S6801F
	R411	RS1/8S0R0J
	Other Resistors	RS1/16S###J

OTHERS

	CN104 4P CONNECTOR	AKN7035
	CN105 12P FFC CONNECTOR	RKN1053
	CN103 CONNECTOR	S5B-PH-SM3
	FLEXIBLE CABLE	VDA1681
	CN901, CN943 30P FFC CONNECTOR	VKN1322
	CN101 0.5-24P CONNECTOR	VKN1482
	X601 (27MHz)	VSS1172
	X301 (20MHz)	VSS1186

C VIDEO ASSY

SEMICONDUCTORS

	IC5601	AEK7065
	IC1002, IC1003	BA05FP
	IC8301-IC8303	BA4558F-HT
	IC8381, IC8382	BU4053BCF
	IC8251	TC74HC00AF
	Q8901, Q8902	2SA1576A
	Q8301, Q8302, Q8331, Q8332	2SD2114K
	Q8351, Q8352	2SD2114K
	Q5601, Q8321, Q8382, Q8383	UN5112
	Q5602, Q5603, Q8381, Q8903	UN5212
	D1004	1SR154-400
	D5601-D5604, D8382, D8383	1SS355
	D8901, D8902	1SS355
	D8391, D8392	UDZS6.8B

COILS AND FILTERS

	L8251-L8254 CHIP BEADS	VTL1076

CAPACITORS

	C8803-C8805	CCSRCH470J50
	C8307, C8308	CCSRCH680J50
	C8303, C8304	CCSRCH681J50
	C8337, C8338, C8357	CCSRCH821J50
	C8313-C8316, C8341-C8344	CEAT100M50
	C8361-C8364	CEAT100M50
	C8252, C8257, C8260, C8264	CEAT101M16
	C8801, C8802, C8811	CEAT102M6R3
	C8812, C8813	CEAT471M6R3

Mark	No.	Description	Part No.
	C8383-C8388, C8391, C8392		CEJQ100M16
	C8901-C8906		CEJQ100M16
	C1004, C1006, C8309, C8310		CEJQ470M16
	C8258, C8261, C8311, C8312		CKSRYB103K50
	C8339, C8340, C8359, C8360		CKSRYB103K50
	C8381, C8382		CKSRYB103K50
	C1003, C1005, C8251, C8253		CKSRYB104K25
	C8255, C8256		CKSRYB104K25
	C8331-C8334, C8351, C8353		CKSRYB152K50
	C8354		CKSRYB224K10
	C8263, C8265		CKSRYB473K50
	C8358		CKSRYB562K50

RESISTORS

	R8801-R8803, R8811-R8813	RS1/16S75R0F
	Other Resistors	RS1/16S###J

OTHERS

	CN8811 15P FFC CONNECTOR	52045-0545
	CN8802 4P MINI JACK	AKP7045
	CN8906, CN8907 23P PLUG	AKP7064
	JA8253 OPT. LINK OUT	GP1FA502TZ
	JA8251, JA8252 OPT. LINK IN	GP1FA512RZB
	8901 PCB BINDER	VEF1040
	JA8801 1P PIN JACK	VKB1122
	CN8302, CN8908 30P FFC CONNECTOR	VKN1322
	CN8301 30P FFC CONNECTOR	VKN1434

D DSP ASSY

SEMICONDUCTORS

	IC8201	AK4114VQ
	IC8401	AK4628VQ
	IC8501	DSPD56367PV150
	IC8901	NJM2391DL1-33
	IC8902	NJU7223DL1-18
	IC8701	TC74LVX244FT
	IC8702	TC74VHCT244AFT
	IC8502	TC7WU04FU
	Q8504	UMD2N
	Q8503	UN5112
	D8501	1SS355
	D8401	DAN202K
	D8402, D8502, D8503	DAP202K

COILS AND FILTERS

	L8002, L8004, L8501, L8502	ATL7002
	L8201, L8203, L8204, L8401, L8402	QTL1013
	L8504, L8701, L8702	QTL1013

CAPACITORS

	C8209, C8210	CCSRCH100D50
	C8421	CCSRCH101J50
	C8007, C8008, C8201, C8212, C8214	CCSRCH471J50
	C8404, C8409-C8414, C8416, C8417	CCSRCH471J50
	C8419, C8505, C8507, C8509	CCSRCH471J50
	C8511, C8512, C8515, C8518, C8520	CCSRCH471J50
	C8522, C8524, C8526, C8528, C8530	CCSRCH471J50
	C8532, C8534, C8536, C8539, C8541	CCSRCH471J50
	C8543, C8545, C8551, C8703, C8706	CCSRCH471J50
	C8548, C8549	CCSRCH8R0D50
	C8701, C8704	CEV100M16
	C8406, C8415, C8546, C8547, C8902	CEV101M16
	C8904	CEV101M16
	C8217, C8225, C8408	CEV470M6R3
	C8204, C8555	CKSRYB102K50
	C8009, C8405, C8418, C8517, C8554	CKSRYB103K50
	C8003, C8005, C8010, C8202, C8207	CKSRYB104K16
	C8213, C8215, C8407, C8420, C8422	CKSRYB104K16
	C8504, C8513, C8521, C8523, C8525	CKSRYB104K16
	C8527, C8529, C8531, C8533, C8535	CKSRYB104K16
	C8537, C8538, C8540, C8542, C8544	CKSRYB104K16
	C8550, C8702, C8705, C8901, C8903	CKSRYB104K16
	C8516	CKSRYB105K6R3
	C8514	CKSRYB333K16
	C8203	CKSRYB473K50

RESISTORS

	R8506	RAB4C101J
	R8201	RS1/16S1802F
	Other Resistors	RS1/16S###J

OTHERS

	X8501 (27MHz)	VSS1171
	X8201 (24.576MHz)	XSS3003
	CN8003 13P SOCKET	AKP7070
	CN8007, CN8011 19P SOCKET	AKP7073
	KN8102 WRAPPING TERMINAL	VNF1084

E DSPTRADE ASSY

CAPACITORS

	C8907	CKSRYB104K16

OTHERS

	CN8901 13P PLUG	AKP7059
	CN8902, CN8903 19P PLUG	AKP7062
	CN8904, CN8905 23P SOCKET	AKP7178

F FM/TUNER MODULE

SEMICONDUCTORS

	IC201	BA1451F
	IC202	LC72131MD
	Q201,Q204,Q205	2SC2412K
	Q202	DTA124ES
	Q203	DTC124EK
	D201	1SS133
	D202	MTZJ5.1C

COILS AND FILTERS

	L201 FM DETECTOR COIL	ATE7003
	F202 FM CERAMIC FILTER	ATF-107
	F201 FM CERAMIC FILTER	ATF-119
	F203 AM CERAMIC FILTER	ATF1155

CAPACITORS

	C206	CCSRCH100D50
	C212,C213,C226,C233-C235	CCSRCH101J50
	C240	CCSRCH101J50
	C231,C232	CCSRCH150J50
	C223	CEAT100M50
	C229	CEAT101M10

Mark No.	Description	Part No.
C224		CEAT1R0M50
C227		CEAT220M25
C241		CEAT2R2M50
C243		CEAT330M16
C228		CEAT3R3M50
C237		CEAT470M10
C211		CEJA1R0M50
C210		CEJA470M16
C204,C238,C602		CKSRYB102K50
C101,C102,C208,C220,C239		CKSRYB103K50
C242,C601		CKSRYB103K50
C216,C217		CKSRYB123K50
C225		CKSRYB153K50
C201,C205,C209,C214,C230		CKSRYB223K50
C236,C603		CKSRYB223K50
C221		CKSRYB224K10
C202,C222		CKSRYB473K16
C215		CKSRYB681K50

RESISTORS

R211		RD1/4PU221J
R221		RD1/4PU222J
R233		RD1/4PU391J
R243		RS1/10S0R0J
R103		RS1/10S331J
R104		RS1/10S391J
Other Resistors		RS1/16S###J

OTHERS

CN201	13P FFC CONNECTOR	52044-1345
BN201	4P ANTENNA TERMINAL	AKA7003
	SHIELD CASE T	ANK7072
	SHIELD CASE B	ANK7073
X201	CRYSTAL RESONATOR (7.2MHz)	ASS1093

G TXTRDE ASSY

SEMICONDUCTORS

IC5702		BA10FP
D5701		1SS355

CAPACITORS

C5701, C5702, C5706		CEAT100M50
C5705, C5707		CEAT470M16
C5708		CKSRYB103K50
C5703, C5704, C5716		CKSRYB104K16

RESISTORS

Other Resistors		RS1/16S###J

OTHERS

CN5702	13P FFC CONNECTOR	52045-1345
CN5701	19P FFC CONNECTOR	52045-1945
KN5701	WRAPPING TERMINAL	VNF1084

H CONTROL ASSY

SEMICONDUCTORS

IC1001		BA12FP
IC8003, IC8401, IC8501-IC8506, IC8652		BA4558F-HT
IC8001, IC8002		BU4051BCF
IC8651		BU4052BCF
IC8402		BU4066BCF
IC1004		NJM7805DL1A
IC5501		PDC110B
Q5201, Q5202, Q5501, Q5572		2SC4081
Q8001-Q8004, Q8401, Q8402		2SC4081
Q8007, Q8008		2SD2114K
Q8005, Q8006, Q8010-Q8012		UN5112
Q8403, Q8404, Q8406		UN5112
Q8009, Q8014, Q8405, Q8407		UN5212
Q5571		UN521L
D1001		1SR154-400
D1006, D5575, D8003-D8006, D8009		1SS355
D8001, D8002		UDZS6.8B
D5201-D5203, D5205, D5206		UDZS8.2B
D5605-D5610		UDZS8.2B

COILS AND FILTERS

L5571	INDUCTOR	LFEA220J
L5601	CHIP BEADS	VTL1075

CAPACITORS

C5575 (0.047F/5.5V)		ACH1246
C5203, C5204, C5505, C5510, C5511		CCSRCH101J50
C5577, C8069, C8072		CCSRCH101J50
C8001-C8012		CCSRCH221J50
C1007, C1010, C5576, C8021, C8022		CEAT100M50
C8025, C8026, C8031, C8032		CEAT100M50
C8401, C8402, C8537, C8538		CEAT100M50
C8651, C8652, C8657, C8658		CEAT100M50
C5507, C5508, C5572, C8539, C8541		CEAT101M16
C5606		CEAT102M10
C5578		CEAT1R0M50
C5605		CEAT222M10
C1002, C8056, C8058, C8060, C8062		CEAT470M16
C5504		CKSRYB102K50
C1008, C1009, C5506, C5517, C5518		CKSRYB103K50
C5571, C5573, C5580, C8055, C8057		CKSRYB103K50
C8059, C8061, C8403, C8404		CKSRYB103K50
C8407, C8408, C8505-C8512		CKSRYB103K50
C8517-C8524, C8529-C8536, C8540		CKSRYB103K50
C8659, C8660		CKSRYB103K50
C1001, C5513-C5516, C5574		CKSRYB104K16
C8063-C8065, C8070, C8661, C8662		CKSRYB104K16

RESISTORS

R8501, R8502, R8505, R8506		RS1/16S1002F
R8511, R8512, R8515, R8516		RS1/16S1002F
R8521, R8522, R8525, R8526		RS1/16S1002F
Other Resistors		RS1/16S###J

OTHERS

X5501 (10MHz)		ASS7034
CN5601	5P FFC CONNECTOR	52045-0545
CN5501	7P FFC CONNECTOR	52045-0745
CN3902	13P FFC CONNECTOR	52045-1345
CN5605	19P FFC CONNECTOR	52045-1945
8001	6P PIN JACK	AKB7012
CN5602	20P SOCKET	AKP7129
CN8501	12P CONNECTOR	AKP7131
CN5201	10P CONNECTOR	AKP7134
JA8002	2P PIN JACK	RKB1041

Mark No.	Description	Part No.
	CN5603 7P FFC CONNECTOR	VKN1267
	CN5502, CN5604, CN8401 30P FFC CONNECTOR	VKN1434
	KN1001 WRAPPING TERMINAL	VNF1084

I HP ASSY

SEMICONDUCTORS

	IC3901	LC75344M
	IC3902	NJM4560M
	Q3911	2SA1576A
	Q3910	2SC4081
	Q3903-Q3906	2SD2114K
	D3901	1SS355
	D3902	UDZS11B

CAPACITORS

	C3909, C3910	CCSRCH101J50
	C3907, C3908	CCSRCH470J50
	C3901-C3904, C3930, C3932, C3935	CEAT100M50
	C3905, C3906, C3933, C3940, C3942	CEAT470M16
	C3911, C3912	CEJQNP101M16
	C3913, C3914	CKSRYB102K50
	C3931	CKSRYB103K50
	C3936, C3939	CKSRYB104K16
	C3915, C3916	CKSRYB223K25

RESISTORS

	R3915-R3932	RS1/10S101J
	Other Resistors	RS1/16S###J

OTHERS

	CN3901 13P FFC CONNECTOR	52044-1345
	3901 MINI JACK	AKN7026
	KN3901 WRAPPING TERMINAL	VNF1084

J LCDCONT ASSY

SEMICONDUCTORS

	Q5001	2SC4081
	D5004-D5006	1SS355
	D5007, D5011-D5013	UDZS6.2B

CAPACITORS

	C5012-C5014	CCSRCH220J50
	C5002, C5051	CEAL470M16
	C5052	CFTLA104J50
	C5018	CKSRYB103K50
	C5001, C5004	CKSRYB104K16

RESISTORS

	Other Resistors	RS1/16S###J

OTHERS

	CN5001 9P SOCKET	AKP7068
	5051 REMOTE RECEIVER UNIT	GP1UM27XK

K CONNECT ASSY

SEMICONDUCTORS

	D5103	1SS355
	D5101, D5102	HZU2.0B
	D5104, D5105, D5107-D5109	UDZS8.2B

Mark No.	Description	Part No.

RESISTORS

	Other Resistors	RS1/16S###J

OTHERS

	CN5102 9P PLUG	AKP7057
	CN5101 10P CONNECTOR	AKP7134

L KEY R TOP ASSY

SWITCHES AND RELAYS

	S1902, S1903	ASG7013

RESISTORS

	Other Resistors	RS1/16S###J

OTHERS

	1903 7P CABLE HOLDER	51048-0700
	CN1902 5P FFC CONNECTOR	52044-0545
	J1901 JUMPER WIRE	D20PYY0710E

M KEY R ASSY

SWITCHES AND RELAYS

	S1901	ASG7013

RESISTORS

	Other Resistors	RS1/16S###J

OTHERS

	1905 6P CABLE HOLDER	51048-0600
	1904 7P CABLE HOLDER	51048-0700
	J1902 PARALELL WIRE	D20PYY0625E

N KEY L ASSY

SEMICONDUCTORS

	Q1904	2SC4081
	D1901	SLR-343PC(LM)

SWITCHES AND RELAYS

	S1904	ASG7013

RESISTORS

	Other Resistors	RS1/16S###J

OTHERS

	1907 3P CABLE HOLDER	51048-0300
	1906 6P CABLE HOLDER	51048-0600
	J1903 JUMPER WIRE	D20PYY0310E

O KEY L TOP ASSY

SWITCHES AND RELAYS

	S1905, S1906	ASG7013

RESISTORS

	Other Resistors	RS1/16S###J

OTHERS

	1908 3P CABLE HOLDER	51048-0300

Mark	No.	Description	Part No.

P COMPONENT ASSY

OTHERS

CN8951	15P FFC CONNECTOR	52045-0545
JA8951	3P PIN JACK	VKB1182

6. ADJUSTMENT

6.1 TUNER SECTION

■ AM Tuner Section

• There is no adjustment in the AM tuner.

■ FM Tuner Section

• Set the mode selector to FM BAND.
• Connect the wiring as shown in Fig. 1.

[ANT. INPUT SIGNAL]

• Frequency : 98 MHz
• Modulation : OFF
• Input Level : 80 dBμV

Step No.	Adjustment Title	Adjustment point	Measurement point	Adjustment value	Adjustment State
1	T-METER Adjustment	L201	IC201 Pin 21/Pin23	0 ± 50mV	Adjust L201 so that the DC voltage between Pin 21 and Pin 23 of IC201 (Test point "Vtm") gets within 0 ± 50mV.

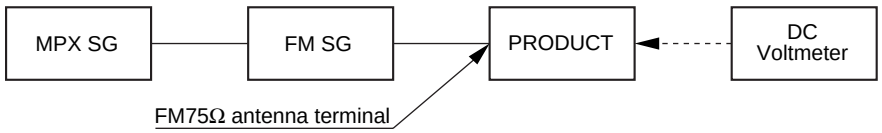


Fig.1 Adjustment Wiring Diagram

F FM/AM TUNER MODULE

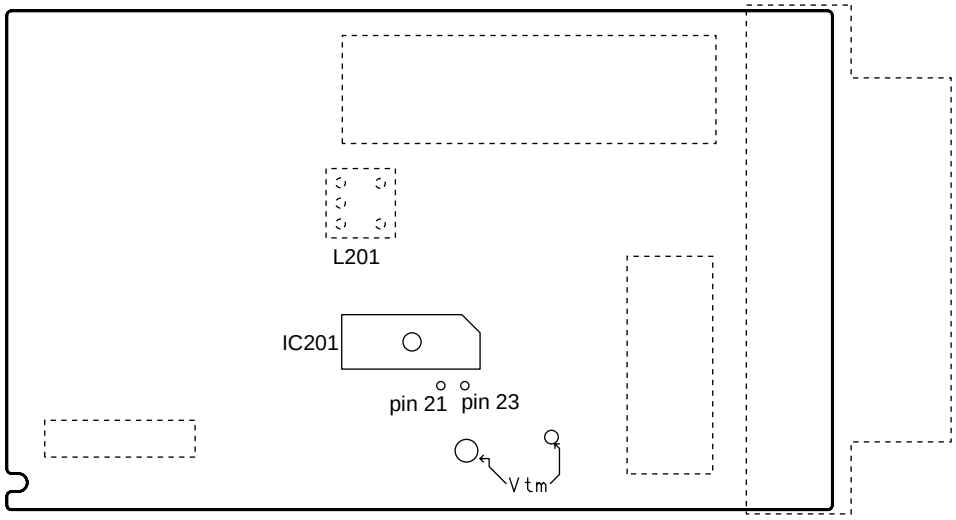


Fig.2 Adjustment Point

6.2 ADJUSTMENT ITEMS AND LOCATION

■ Adjustment Items

[Mechanism Part]

❶ Tangential and Radial Height Coarse Adjustment

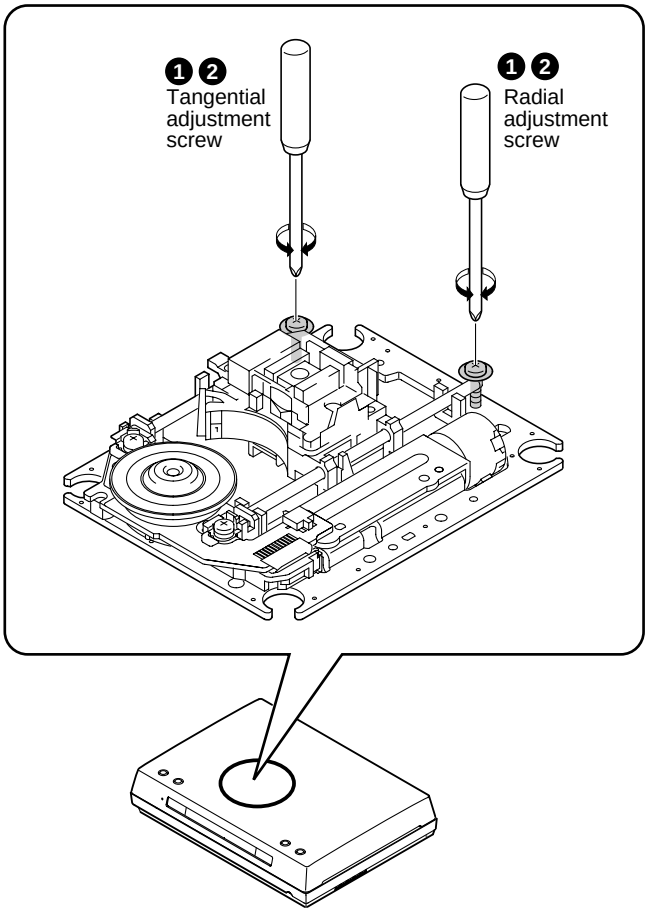
❷ DVD Jitter Adjustment

[Electrical Part]

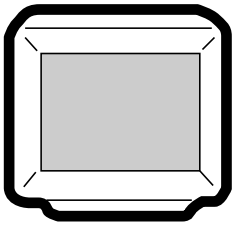
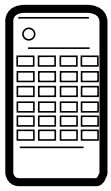
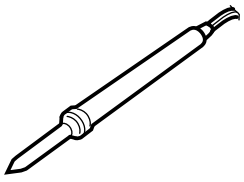
Electrical adjustments are not required.

■ Adjustment Points (Mechanism Part)

Cautions: After adjustment, adjustment screw locks with the Screw tight.



6.3 JIGS AND MEASURING INSTRUMENTS

⊕ Screwdriver (large)	⊕ Screwdriver (medium)	 TV monitor	 Test mode remote control unit (GGF1381)
⊕ Precise screwdriver	DVD test disc (GGV1025)	 Soldering iron	Screw tight (GYL1001)

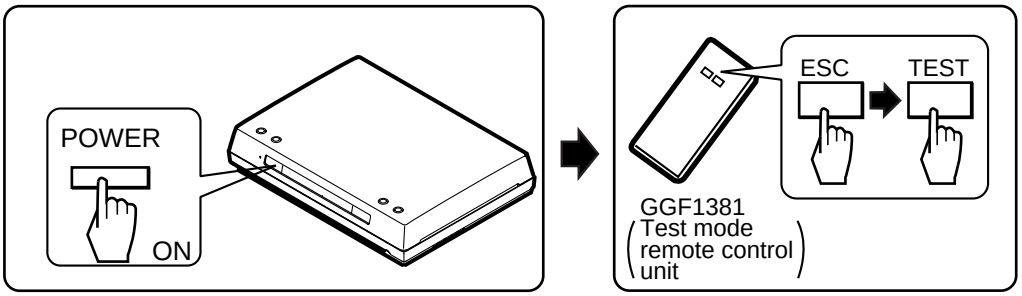
6.4 NECESSARY ADJUSTMENT POINTS

When	Adjustment Points	
■ Exchange Parts of Mechanism Assy		
Exchange the Pickup	Mechanical point	❶, ❷ ＊ After adjustment, screw locks with the Screw tight.
	Electric point	———
Exchange the Traverse Mechanism	Mechanical point	———
	Electric point	———
Exchange the Spindle Motor	Mechanical point	❷ ＊ After adjustment, screw locks with the Screw tight.
	Electric point	———
■ Exchange PCB Assy		
Exchange PC Board LOAB and DVDM ASSY	Mechanical point	———
	Electric point	———

6.5 TEST MODE

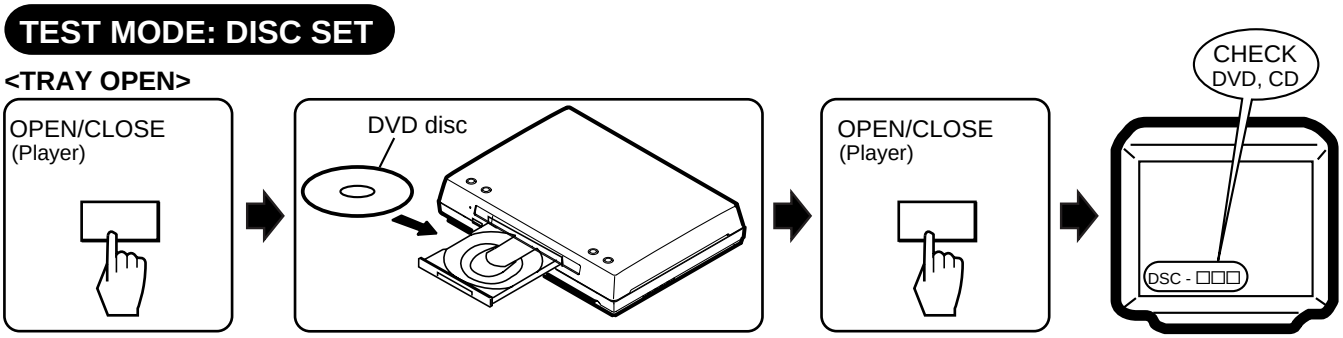
• The TEST MODE functions that are used only during adjustment are described here. For details, see "7.1.1 TEST MODE".

TEST MODE: ON



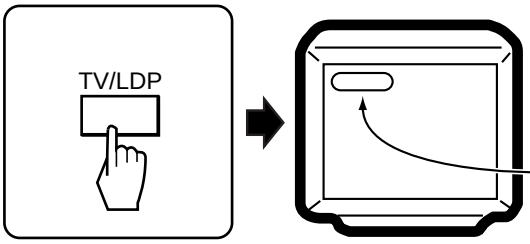
TEST MODE: DISC SET

<TRAY OPEN>



TEST MODE: PLAY

<PLAY>

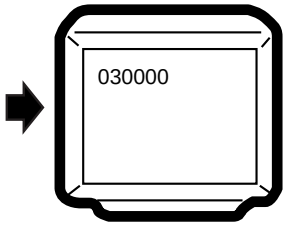


CAUTION:
Perform only trace, video and audio outputs are nothing.

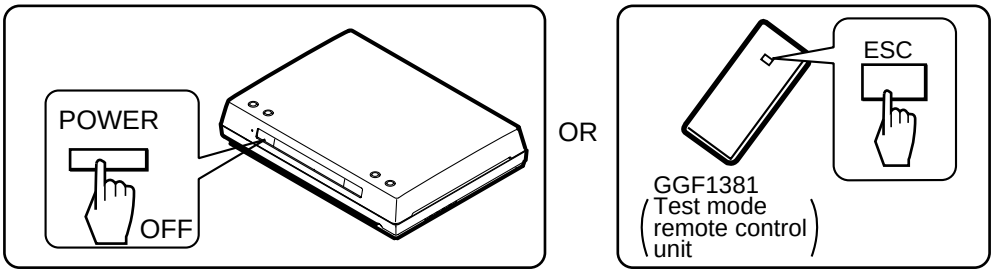
< When playback with the target address of disc (DVD)>

For example, when playback with # 30000

During PLAY [+10] ➡ [3] ➡ [0] ➡ [0] ➡ [0] ➡ [0] ➡ [CHP/TIM] Press keys in order



TEST MODE: OFF

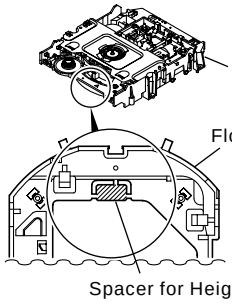


6.6 MECHANISM ADJUSTMENT

1 Tangential and Radial Height Coarse Adjustment

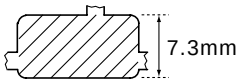
START

- Remove the Loading Mecha. Assy.
- Remove a Spacer for height adjustment attached to the back side (shaded area) of the Loading Mecha. Assy (Float Base) with nippers.

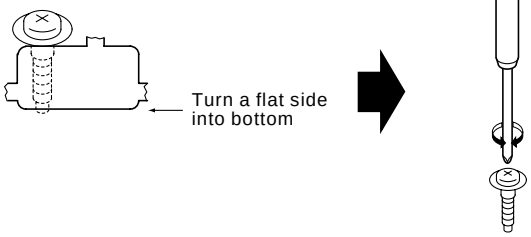


Note:
Before removing the flexible cable for the pickup, soldering of the pickup circuit is necessary.
For details, see "7.1.9 DISASSEMBLY".

Cautions:
Because there is not a Spacer for height adjustment in adjustment after the second time, will keep it at need.
(This parts is Traverse mechanism exclusive use of a model for 2003 years)



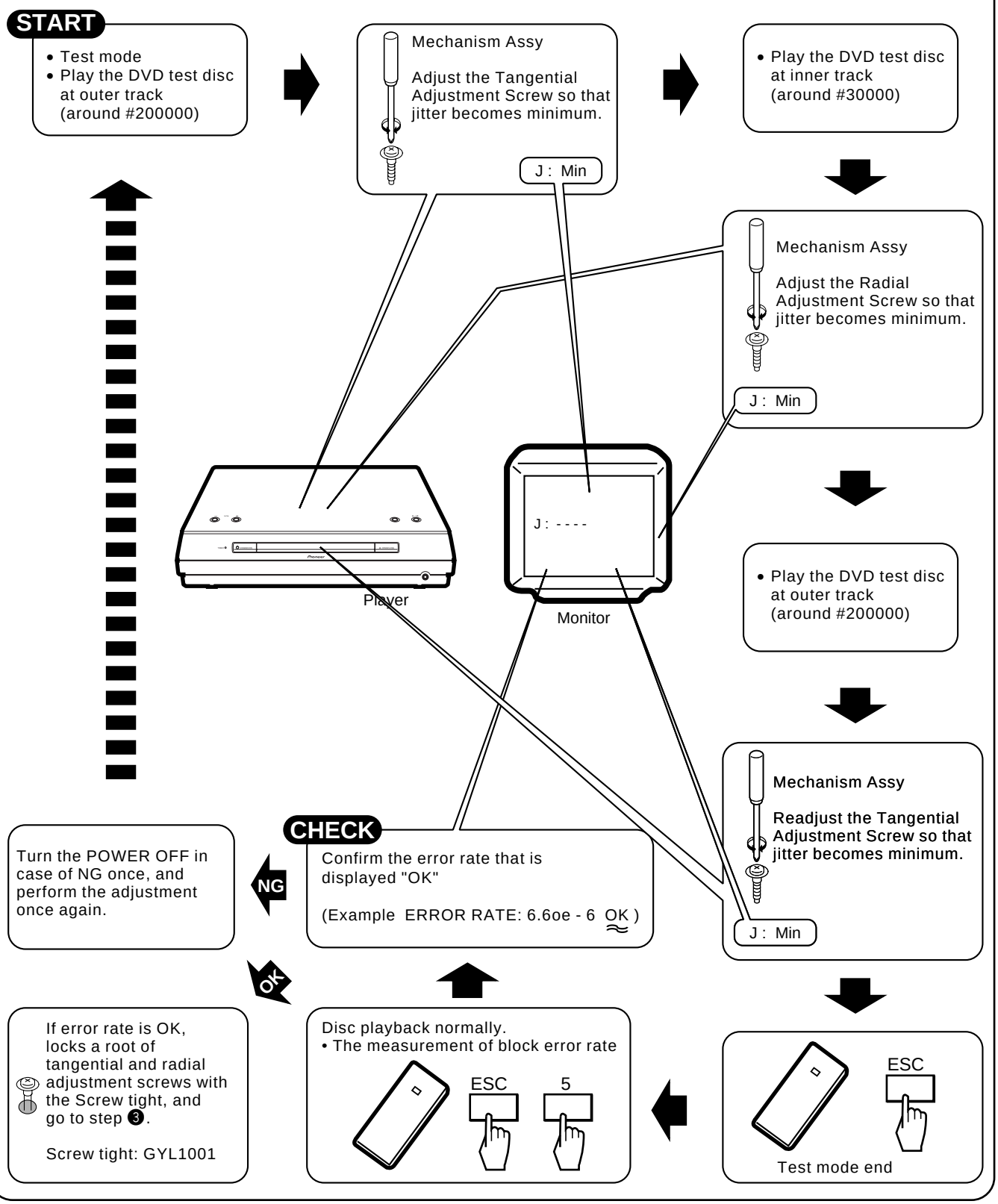
Put a spacer between a Tangential (or Radial) adjustment screw and Mechanism Base and turn each screw to adjust the height. (Refer to "6.1 ADJUSTMENT ITEMS AND LOCATION".)



2 DVD Jitter Adjustment

- Playback method of inner and outer address for the purpose is refererd to "6.5 TEST MODE".
- Jitter indication of the monitor is refererd to "7.1.2 DISPLAY SPECIFICATION OF THE TEST MODE".

Use disc: GGV1025


START
• Test mode
• Play the DVD test disc at outer track (around #200000)
Mechanism Assy
Adjust the Tangential Adjustment Screw so that jitter becomes minimum.
J : Min
• Play the DVD test disc at inner track (around #30000)
Mechanism Assy
Adjust the Radial Adjustment Screw so that jitter becomes minimum.
J : Min
J : - - - -
Player
Monitor
• Play the DVD test disc at outer track (around #200000)
Mechanism Assy
Readjust the Tangential Adjustment Screw so that jitter becomes minimum.
J : Min
CHECK
Confirm the error rate that is displayed "OK"
(Example ERROR RATE: 6.6oe - 6 OK)
NG
Turn the POWER OFF in case of NG once, and perform the adjustment once again.
OK
If error rate is OK, locks a root of tangential and radial adjustment screws with the Screw tight, and go to step ❸.
Screw tight: GYL1001
Disc playback normally.
• The measurement of block error rate
ESC
5
ESC
Test mode end

7. GENERAL INFORMATION

7.1 DIAGNOSIS

7.1.1 TEST MODE

Test Mode Functional Specification

① Test mode entry

In the power ON state, press the [ESC] (A8-5F) key and [TEST / RANDOM] (A8-5E) key in order of the Test mode remote control unit.

• OSD displays test mode. Refer to the "7.1.2 DISPLAY SPECIFICATION OF THE TEST MODE".

② Release the Test mode

• Turn off the power.
• Press the [ESC] (A8-5F) key of the remote control unit and reset it.

③ Tray open / close

• Press the [REPEAT A-B] (A8 - 48) key of the remote control unit.
• Press the [OPEN / CLOSE] key of the main unit from the stop state.

④ Playback stop

1. Press the [REPEAT] (A8 - 44) key of the remote control unit from the playback state.
2. Press the [STOP] key of the remote control unit or main unit from the playback state.
   (Playback stops, but the loaded disc keeps rotating.)

⑤ LD ON

DVD : Press the [TEST] (A8-5E) and [1] (A8-01) keys in order, and turn on the laser diode (650n).
CD : Press the [TEST] (A8-5E) and [4] (A8-04) keys in order, and turn on the laser diode (780n).

⑥ Focus on / sweep

1. Lock the focus by pressing the [TEST] (A8-5E) and [2] (A8-02) keys in order.
2. Repeat focus sweep by pressing the [TEST] (A8-5E) and [3] (A8-03) keys in order.

⑦ Spindle FG servo

CAV : Press the [TEST] (A8-5E) and [5] (A8-05) keys in order,then rise up the spindle and FG servo becomes on.
CLV : Press the [TEST] (A8-5E) and [9] (A8-09) keys in order,then rise up the spindle and FG servo becomes on.

⑧ Tracking open / close

1. Open tracking by pressing the [STEP FWD] (A8-54) key of the remote control unit in the play state.
2. Close tracking by pressing the [STEP REV] (A8-50) key of the remote control unit in the play state.

⑨ Slider servo on/off

1. Turn on the slider servo by pressing the [TEST] (A8-5E) and [CX] (A8-0E) keys in order.
2. Turn off the slider servo by pressing the [TEST] (A8-5E) and [TV/LDP] (A8-0F) keys in order.

⑩ Slider in / out

Slider in : In the tracking off state, press the [SCAN REV] (A8-11) key of the remote control unit.
Slider out : In the tracking off state, press the [SCAN FWD] (A8-10) key of the remote control unit.

⑪ Play (perform only the ID search and trace to the specified location)

Press the [TV/LDP] (A8-0F) key of the remote control unit from the stop state.
Perform only trace, video and audio outputs are nothing.

⑫ Screen display ON/OFF

1. Turn off the display by pressing the [AUDIO] (A8-1E) key of the remote control unit.
2. Turn on the display by pressing the [DISPLAY] (A8-43) key of the remote control unit.

⑬ Search

1. Search address input entry

- It becomes the address input mode when pressing the [+10] (A8-1F) key. (Most significant digit of an address displays "<".)
- In this time, display the last address as the initial state.

2. Search address input

- Press the [0] to [9] (A8-00 to 09) keys of the remote control unit. In the DVD, set an address with hexadecimal.
- In the address input mode, turn to the hexadecimal input by pressing the [PROGRAM] (A8-4C) key (display a "∗" mark), and [1] to [6] keys are each input as A to F.
- Hexadecimal input and decimal input can switch with toggle.
- In case of CD, perform only the absolute time search.

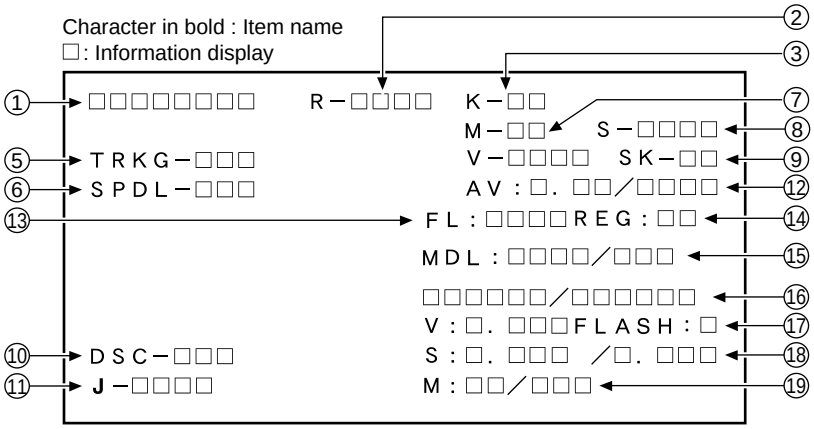
3. Search execution

- Press the [CHP/TM] (A8-13) key of the remote control unit.
- After the search, perform only trace and video and audio outputs are nothing.

4. Release the Search address input

- Clear the address by pressing the [CLEAR] (A8-45) key. Release the address input mode when pressing the [CLEAR] key once again.

7.1.2 DISPLAY SPECIFICATIONS OF THE TEST MODE



① **Address indication**
The address being traced is displayed in number.
(as for the DVD, indication of decimal number is possible.)
DVD : ID indication (hexadecimal number, 8 digits)
[＊＊＊＊＊＊＊＊]
CD : A-TIME (min. sec.) [0 0 0 0 ＊＊＊＊]

② **Code indication of remote control unit [R – ＊＊＊＊]**
In case of double code, display a 2nd code.

③ **Main unit keycode indication [K – ＊＊]**

⑤ **Tracking status [TRKG – ＊＊＊]**
Tracking on : [ON]
Tracking off : [OFF]

⑥ **Spindle status [SPDL – ＊＊＊]**
[OFF], [ACC/BRK], [CAV], [CLV]

⑦ **Mechanism (loading) position value [M – ＊＊]**
Unknown : [01] or [41]
Open state : [04]
Close state : [08]
During opening : [12]
During closing : [22]

⑧ **Slider position [S – ＊＊＊＊]**
In Side Switch ON : [01]
In Side Switch OFF : [00]

⑨ **Output video system [V – ＊＊＊＊]**
NTSC system : [NTSC]
PAL system : [PAL]
Automatic setting : [AUTO]

Scart terminal output [SK – ＊＊]
(Display only the WY model which can do the output setting of scart terminal.)
VIDEO : [00]
S-VIDEO : [01]
RGB : [02]

⑩ **Disc sensing [DSC – ＊＊＊]**
The type of discs loaded is displayed.
[DVD], [CD], [ ]

⑪ **Jitter value [J – ＊＊＊＊]**

⑫ **Version of the AV-1 chip / version of firmware [AV: ＊＊ / ＊＊＊＊＊＊＊＊]**

⑬ **Version of the FL controller [FL: ＊＊＊＊]**

⑭ **Region setting of the player [REG: ＊]**
Setting value : [1] to [6]

⑮ **Destination setting of the System Control Microcomputer [MDL: ＊＊＊＊ / ＊＊＊]**
Four characters in the front represent the type of model.
Three characters in the back represent the destination code.
J: /J, K: /KU, /KC, /KU/KC, R: /RL/RD, RAM : /RAM,
LB: /LB, WY: /WY

⑯ **Part number of the flash ROM and DVD Control Microcomputer [＊＊＊＊＊＊ / ＊＊＊＊＊＊]**

⑰ **Version of the flash ROM [V: ＊. ＊＊＊]**
Flash ROM size [FLASH = ＊＊]

⑱ **Revision of the DVD Control Microcomputer [S: ＊. ＊＊＊ / ＊. ＊＊＊]**
version . revision / build number of the ST core

⑲ **Revision of the DVD mechanism controller [M: ＊＊ / ＊＊＊]**
Kinds of version / firmware of the FE.
RAM or ROM

7.1.3 FUNCTIONAL SPECIFICATION OF THE SHORTCUT KEY

Only during normal playback, the following shortcut keys can be assigned by pressing a required key after pressing the ESC key of the remote control unit. To quit, press the ESC key

Command Contents	Conditions	Remote Control Key Name	Remote Control Code
Memory clear and resion / revision indication		CLEAR (∗1)	A8-45
Average value measurement of DVD error rate		5 (∗1)	A8-05
CD error rate measurement		5 (∗1)	A8-05
Aspect : Pan scan		2	A6-01
Aspect : Letter box		3	A6-02
Aspect : Wide		4	A6-03
Digital : AC3		5	A6-04
Digital : AC-3 > PCM		6	A6-05
Virtual surround : OFF	Only for models having the corresponding functions	7	A6-06
Virtual surround : TruSurround		8	A6-07
Digital output ON		REPEAT A	A6-A1 AF-E8
Digital output OFF		REPEAT B	A6-A1 AF-E4
DTS Digital output ON		STEP FWD	A6-A1 AF-B7
DTS Digtal output OFF		STEP REV	A6-A1 AF-B8
Scart terminal output : VIDEO	WY, models equipped with Scart terminal	AUDIO	A6-A1 AF-BE
Scart terminal output : S-VIDEO		SUBTITLE	A6-A1 AF-36
Scart terminal output : RGB		ANGLE	A6-A1 AF-B5
Progressive OFF	Only for progressive models	R_SKIP	A6-92
Progressive ON		F_SKIP	A6-91
Audio 5.1 CH ON	Only for models having the corresponding functions	KD_ENTER	A6-74
FL indication of EDC / ID error		CX (∗1)	A8-0E
FL indication of ID number		STEREO (∗1)	A8-4A
ZOOM ON (X4)		ZOOM	A6-A1 AF-37
ZOOM OFF		< X3 (∗1)	A8-59
Service mode indication (error rate indication, etc.)		CHP/TIM (∗1)	A8-13
Model information indication		CHAP (∗1)	A8-40
Background color change		+10 (∗1)	A8-1F
Audio last stage mute ON		9	A6-08
Audio last stage mute OFF		0	A6-09
Title search Input mode IN Title No. input Search execution		SIDE A (∗1) Numbers (∗1) PLAY (∗1)	A8-4D A8-00 to A8-09 A8-17
Region confimation mode		AUDIO (∗1) Numbers (∗1)	A8-1E A8-01 to A8-08

∗1 : Test mode remote control unit

• Service mode indication (ESC + CHP/TIM keys)
ID Address
The error rate is always displayed in exponential notation, e.g., ∗.∗ ∗ e - ∗, for both DVDs and CDs.
EDC/ID/AV 1 error history (ID Address, EDC/ID/AV 1 Error, last eight errors)
Self-diagnosis functions (If a mechanical error has occurred, the mechanical-error history is also displayed.)

• Calculation of the average error rate (ESC + "5" [Test mode remote control unit] keys)
The average of the last eight error rates is calculated and indicated in exponential notation. After the calculation is completed, "OK" or "NG" is displayed. If "NG" is displayed, the disc tray will open (for both DVDs and CDs)
For DVDs: OK with 5.0e-4 or less, for CDs: OK with 7.6e-3 or less

• Indication of model information (ESC + CHAP keys)
The items from 12 to 19 of the TEST MODE Indications are displayed. However, in the indications, S in the standard test mode is changed to B.E VERSION, and M is changed to F.E VERSION. For details, see 7.1.4.

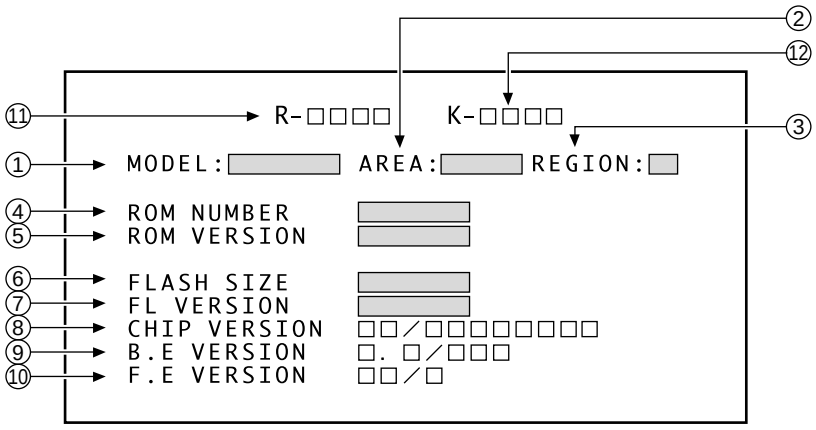
• Change of the background colors (ESC + "+10" [Test mode remote control unit] keys)
Every time the keys are pressed, the background color is changed between blue and green alternately.
(The green background is used in SETUP NAVIGATOR.)

• Region confirmation mode (ESC + AUDIO [Test mode remote control unit] + "1"-"8" [Test mode remote control unit] keys)
After you press the AUDIO key while holding the ESC key pressed and then input the region number, if the number is different from that set in the unit, an error message is displayed, and the tray opens.

7.1.4 SPECIFICATION OF MODEL INFORMATION

To display model information : Press the ESC key then the CHAP key.
To close the model information display : Press the ESC key.

• Display contents



Character in bold : Item name
□: Information display

① **Model name**
Display it according to model information set from the System Control Microcomputer.
② **Destination indication**
Display it according to model information set from the System Control Microcomputer.
③ **Region No.**
④ **Part number**
⑤ **ROM version**
⑥ **Flash size**
⑦ **FL controller version**

⑧ **CHIP VERSION**
Version of ST CHIP
CUT ID / JTAG ID
(two columns) (eight columns)

⑨ **B.E VERSION**
Version of BACK END (version of ST core software)
□.□ /□□□
softwareVersion . softwareRevision / buildNumber

⑩ **F.E VERSION**
Version of FRONT END (version of mechanism controller CHIP software)
□□/ □
MainVersion / Kinds of firmware RAM or ROM

⑪ **Remote control code**
⑫ **Key code of Main unit**

7.1.5 FUNCTIONAL SPECIFICATION OF THE SERVICE MODE

• EDC / ID error LCD display (shortcut function)

EDC/ID error is displayed on the LCD display if you press the CX key while holding the ESC key on the TEST MODE remote control unit pressed. To quit while an EDC/ID error is displayed, press the ESC key.

LCD display

0 0 / 0 0 / 0 1 ∗

∗: Lights when an AV1 error was generated at least once.

Number of sites where an EDC or ID error was generated

Number of retrials while an ID error is being generated
(only displayed at the moment when an error is being generated),
and for the ST models, the number of retrials made for the latest ID error

Number of retrials while an EDC error is being generated
(only displayed at the moment when an error is being generated),
and the number of retrials made for the latest EDC error

• Display during Service Mode

To enter Service Mode, press the CHP/TIM key while holding the ESC key pressed.
To quit, press the ESC key.

Service mode display

① ID Address

② Error rate (always displayed), in exponential notation

∗∗ (∗∗∗∗)

Number of error rates

02: Indicates use of the same method as for the 02 models,
No indication: Indicates use of the method used for models before the 02 model

③ EDC/ID/AV1 error history (ID Address, EDC/ID/AV1 errors, last eight errors)

Description of AV1 errors
BIT0: In BE code, an EDC error, FEC I/F buffer overflow, or "not valid" is generated (B.E error)
BIT1: In BE code, the ID is different from that of the target (B.E error)
BIT2: An error was generated in FE-added 2-byte EDC data. (F.E error)

④ Self-diagnosis functions

Whether F.E is normal or not is checked.

FE OK: No abnormality in F.E

FE Error: Abnormality is recognized in F.E.
Pressing the CHP/TIM key again displays the mechanical error history. Each press of the CHP/TIM key changes the displays between the mechanical error history and the Service Mode display.
For details on the mechanical error history, refer to the addendum.

Indication plan contents

AV1 ERR	BIT 2	1	0
00	0	0	0
01	0	0	1
02	0	1	0
03	0	1	1
04	1	0	0
05	1	0	1
06	1	1	0
07	1	1	1

Character in bold : Item name
□: Information display

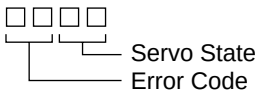
7.1.6 MECHANICAL ERROR HISTORY

■ Mechanical Error History

Only if a mechanical error (FE error) has been generated, a mechanical error history containing up to the last eight errors is displayed if you press the "ESC" + "CHP/TIM" key in Normal Mode.
Errors are displayed in descending order, with the latest one at the top.

Description of the mechanical error history

① Error number
The first two digits are for the error code, and the second two digits are for the servo state.

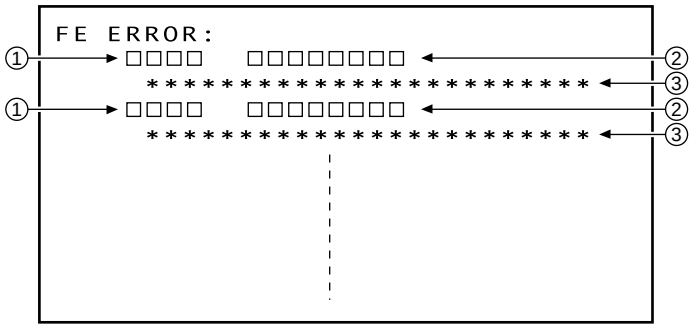


② Error number
The elapsed time from the time when the system was turned on until an error was generated is displayed.
Note: If a later error time is shorter than the previous error time, it means that the unit was turned off then on again.

③ Description of errors
Error messages are displayed.
Example: If the error code is 0x13 (Focus lost timeout) and the servo state is 0x05 (Disc judge), the message becomes "Focus lost timeout in Disc judge."

Note: When an error has been generated, if the servo state is "Disc judge," the disc tray opens, and if the servo state is other than "Disc judge," the unit stops (excluding a case of a device error with the error code 0xd∗).

Indication contents



• List of the error codes

FOCUS ERROR	0x0∗	**FOCUS TIMEOUT**	0x1∗
Focus on error	0x01	Focus on timeout	0x11
Focus off error	0x02	Focus off timeout	0x12
Focus lost error	0x03	Focus lost timeout	0x13
Focus balance adjust error	0x04	Focus balance adjust timeout	0x14
Focus gain adjust error	0x05	Focus gain adjust timeout	0x15
Focus sweep error	0x06	Focus sweep timeout	0x16
Focus reflection error	0x07	Focus reflection timeout	0x17
TRACKING ERROR	0x2∗	**TRACKING TIMEOUT**	0x3∗
Tracking on error	0x21	Tracking on timeout	0x31
Tracking off error	0x22	Tracking off timeout	0x32
Tracking lost error	0x23	Tracking lost timeout	0x33
Tracking balance adjust error	0x24	Tracking balance adjust timeout	0x34
Tracking gain adjust error	0x25	Tracking gain adjust timeout	0x35
STEPPING ERROR	0x4∗	**STEPPING TIMEOUT**	0x5∗
Stepping on error	0x41	Stepping on timeout	0x51
Stepping off error	0x42	Stepping off timeout	0x52
Stepping lost error	0x43	Stepping lost timeout	0x53
Stepping move error	0x44	Stepping move timeout	0x54
SPINDLE ERROR	0x6∗	**SPINDLE TIMEOUT**	0x7∗
Spindle on error	0x61	Spindle on timeout	0x71
Spindle off error	0x62	Spindle off timeout	0x72
Spindle lost error	0x63	Spindle lost timeout	0x73
Spindle CAV error	0x64	Spindle CAV timeout	0x74
Spindle CLV error	0x65	Spindle CLV timeout	0x75
ACQUISITION ERROR	0x8∗	**ACQUISITION TIMEOUT**	0x9∗
PLL lost error	0x83	PLL lost timeout	0x93
DECODER ERROR	0xa∗	**DECODER TIMEOUT**	0xb∗
ID lost error	0xa3	ID lost timeout	0xb3
DEVICE ERROR	0xd∗		
SRAM error	0xd1		

• List of the servo states

0x00	Reset
0x01	Stop (inside position)
0x02	Stop (any position)
0x03	Braking for stop
0x04	New disc
0x05	Disc judge
0x06	Reserved 1
0x07	Playing
0x08	Start up
0x09	Seeking
0x0A	Pausing
0x0B	Reading BCA
0x0C	Reserved 2
0x0D	
0x0E	Tray open
0x0F	Tray moving

Note : 0 x □ □
code
(Only this part is displayed to a display)

ERROR CODE TABLE

Error Name	No.	Causes	Check Item	Possibility of Trouble	Remarks
FOCUS ERROR (0 x 0*)					
Focus on error	0 x 01	Focus on could not be completed	Are not there a dirt or a scratch in the Disc? Does LD become weak? Does the lens move up and down?	1. Pickup 2. Driver 3. Front End IC	
Focus off error	0 x 02	Focus off could not be completed	Unknown		
Focus lost error	0 x 03	Focus servo is lost	Are not there a dirt or a scratch in the Disc? Does LD become weak?	1. Pickup	
Focus balance adjust error	0 x 04	AFB on could not be completed			
Focus gain adjust error	0 x 05	Focus AGC could not be completed			
Focus sweep error	0 x 06				
Focus reflection error	0 x 07	Dimensions of S curve did not reach to the aim value	Does LD become weak?	1. Pickup	
FOCUS TIMEOUT (0 x 1*)					
Focus on timeout	0 x 11	Did timeout at focus on	Are not there a dirt or a scratch in the Disc? Does LD become weak? Does the lens move up and down?	1. Pickup 2. Driver 3. Front End IC	
Focus off timeout	0 x 12	Did timeout at focus off			
Focus lost timeout	0 x 13	Did timeout at focus backup			
Focus balance adjust timeout	0 x 14	Did timeout at AFB			
Focus gain adjust timeout	0 x 15	Did timeout at AGC			
Focus sweep timeout	0 x 16				
TRACKING ERROR (0 x 2*)					
Tracking on error	0 x 21	Tracking on could not be completed		1. Pickup 2. Driver 3. Front End IC	
Tracking off error	0 x 22	Tracking off could not be completed			
Tracking lost error	0 x 23	Tracking servo is lost		1. Pickup	
Tracking balance adjust error	0 x 24	ATB could not be completed		1. Pickup	
Tracking gain adjust error	0 x 25	AGC could not be completed		1. Pickup	
Tracking jump error	0 x 26	Tracking jump could not be completed			
TRACKING TIMEOUT (0 x 3*)					
Tracking on timeout	0 x 31	Did timeout at tracking on	Are not there a dirt or a scratch in the Disc?	1. Pickup 2. Driver 3. Front End IC	
Tracking off timeout	0 x 32	Did timeout at tracking off			
Tracking lost timeout	0 x 33	Did timeout at tracking backup	Are not there a dirt or a scratch in the Disc?	1. Pickup	
Tracking balance adjust timeout	0 x 34	Did timeout at ATB		1. Pickup	
Tracking gain adjust timeout	0 x 35	Did timeout at AGC		1. Pickup	
Tracking jump timeout	0 x 36	Did timeout at tracking jump			
STEPPING ERROR (0 x 4*)					
Stepping on error	0 x 41	Stepping on could not be completed		1. Pickup 2. Driver 3. Front End IC	
Stepping off error	0 x 42	Stepping off could not be completed			
Stepping lost error	0 x 43	Stepping servo is lost			
Stepping move error	0 x 44	Stepping could not move	Do move to inner and outer periphery of the stepping in the test mode? Do indicate "S-04" at the most inner periphery of the stepping?	1. Stepping motor 2. Inside switch 3. Driver	
STEPPING TIMEOUT (0 x 5*)					
Stepping on timeout	0 x 51	Did timeout at stepping on		1. Pickup 2. Driver 3. Front End IC	
Stepping off timeout	0 x 52	Did timeout at stepping off			
Stepping lost timeout	0 x 53	Did timeout at stepping backup			
Stepping move timeout	0 x 54	Did timeout at stepping movement	Do move to inner and outer periphery of the stepping in the test mode? Do indicate "S-04" at the most inner periphery of the stepping?	1. Stepping motor 2. Inside switch 3. Driver	

Error Name	No.	Causes	Check Item	Possibility of Trouble	Remarks
SPINDLE ERROR (0 x 6∗)					
Spindle on error	0 x 61	Spindle on could not be completed			
Spindle off error	0 x 62	Spindle off could not be completed			
Spindle lost error	0 x 63	Spindle lost control			
Spindle CAV error	0 x 64	CAV on could not be completed			
Spindle CLV error	0 x 65	CLV on could not be completed			
SPINDLE TIMEOUT (0 x 7∗)					
Spindle on timeout	0 x 71	Did timeout at spindle on			
Spindle off timeout	0 x 72	Did timeout at spindle stop			
Spindle lost timeout	0 x 73	Did timeout at spindle backup	Are not there a dirt or a scratch in the Disc? Is FG output from the driver?	1. Spindle motor 2. Spindle driver	
Spindle CAV timeout	0 x 74	Did timeout at CAV on	Is spindle rotating? Is FG output from the driver? Is the PDM output from L6315?	1. Spindle motor 2. Spindle driver 3. Front End IC	
Spindle CLV timeout	0 x 75	Did timeout at CLV on			
ACQUISITION ERROR (0 x 8∗)					
PLL lost error	0 x 83	PLL is lost	Are not there a dirt or a scratch in the Disc?	1. Pickup 2. Front End IC	
ACQUISITION TIMEOUT (0 x 9∗)					
PLL lost timeout	0 x 93	Did timeout at PLL backup	Are not there a dirt or a scratch in the Disc?	1. Pickup 2. Front End IC	
DECODER ERROR (0 x a∗)					
ID lost error	0 x a3	ID is not readable	Are not there a dirt or a scratch in the Disc?	1. Pickup 2. Front End IC	
DECODER TIMEOUT (0 x b∗)					
ID lost timeout	0xb3	Did timeout at ID backup	Are not there a dirt or a scratch in the Disc?	1. Pickup 2. Front End IC	
DEVICE ERROR (0 x d∗)					
SRAM error	0 x d1	Cannot access SRAM	Power supply of SRAM Is not bus line short-circuiting?	1. SRAM 2. Front End IC 3. Front End-SRAM bus line	
FAILSAFE (0 x e∗)					
Unexpected error	0 x e1	Unexpected error		1. software runaway 3. Software bug	

Protection Specifications and Service Mode

• Protection Specifications

The system microcomputer (CONTRL Assy IC5501) for this unit always monitors if abnormality of the power is generated, and as soon as an abnormality is detected shuts off the power. The specifications of the microcomputer terminal for monitoring are as follows:

Name of microcomputer terminal		XPROTECT (Pin 22)	VDET (Pin 17)
Monitoring item		Abnormality of AMP-system power Short-circuiting of the SP terminal, etc.	Abnormality of power inside the DVDM Assy
Voltage at terminal	In normal conditions	0.71× Vdd* or more	0.5 Vdd-0.85 Vdd*
	In abnormal conditions	0.36×Vdd–0.71× Vdd*	
	In failure	0.36×Vdd* or less	0.85 Vdd* or more 0.5 Vdd* or less
Monitoring start time		1.5 sec after power is turned on	1.5 sec after power is turned on
Time required for determining abnormality		0.5 sec after detection	0.5 sec after detection

*Vdd = Approx. 5 V (depending on the unit)

In abnormal conditions or in failure, the TIMER LED flashes after the power is shut off. If the power was shut off because of an abnormality, it can be turned on by pressing the STANDBY/ON key. However, if the power was shut off because of failure, **for one minute after a shutdown the STANDBY/ON key is disabled in order to protect against possible ignition of fumes.** If the AC power cord is pulled out during this one minute of standby, when the AC power cord is reconnected, the STANDBY/ON key will still be disabled until the remaining seconds have elapsed.

This unit has Service Test mode for analyzing the above power abnormality. Its specifications are as follows:

1. Specific conditions for Service Test mode

- VDET is neglected.
- XPROTECT is neglected.
- **Even if the unit is urgently shut down in failure in Normal mode, you can turn it on without waiting for one minute.**
- Able to operate without AC pulse.
- Only DVD-TUNER block can operate without AMP POWER block if supplying needed DC voltage.

2. How to enter Service Test mode

- While connecting STEST port (IC5501 Pin43) to "+5V", connect AC power cord. (See next page.)

3. How to quit Service Test mode, and the conditions for quitting

- To quit Service Test mode, turn the power off or disconnect the AC power cord.
- When quitting Service Test mode, only data on protection in RAM are cleared.

4. Indications when Service Test mode starts

- Indications on the LCD display when Service Test mode starts differ depending on whether the unit was turned off normally or if the unit

[After the power is turned off normally]

LCD display `Welcome!` ⇩
LCD display `Volume 0` ⇩
LCD display `DV SERVICE`

[After the power is shut down because of an abnormality in the AMP system]

LCD display `PRTCT WNG` ⇩
LCD display `Volume 0` ⇩
LCD display `DV SERVICE`

[After the power is shut down because of a failure in the AMP system]

LCD display `PRTCT ERR` ⇩
LCD display `Volume 0` ⇩
LCD display `DV SERVICE`

[After the power is shut down because of a failure in the DVD system]

LCD display `DVD PRTECT` ⇩
LCD display `Volume 0` ⇩
LCD display `DV SERVICE`

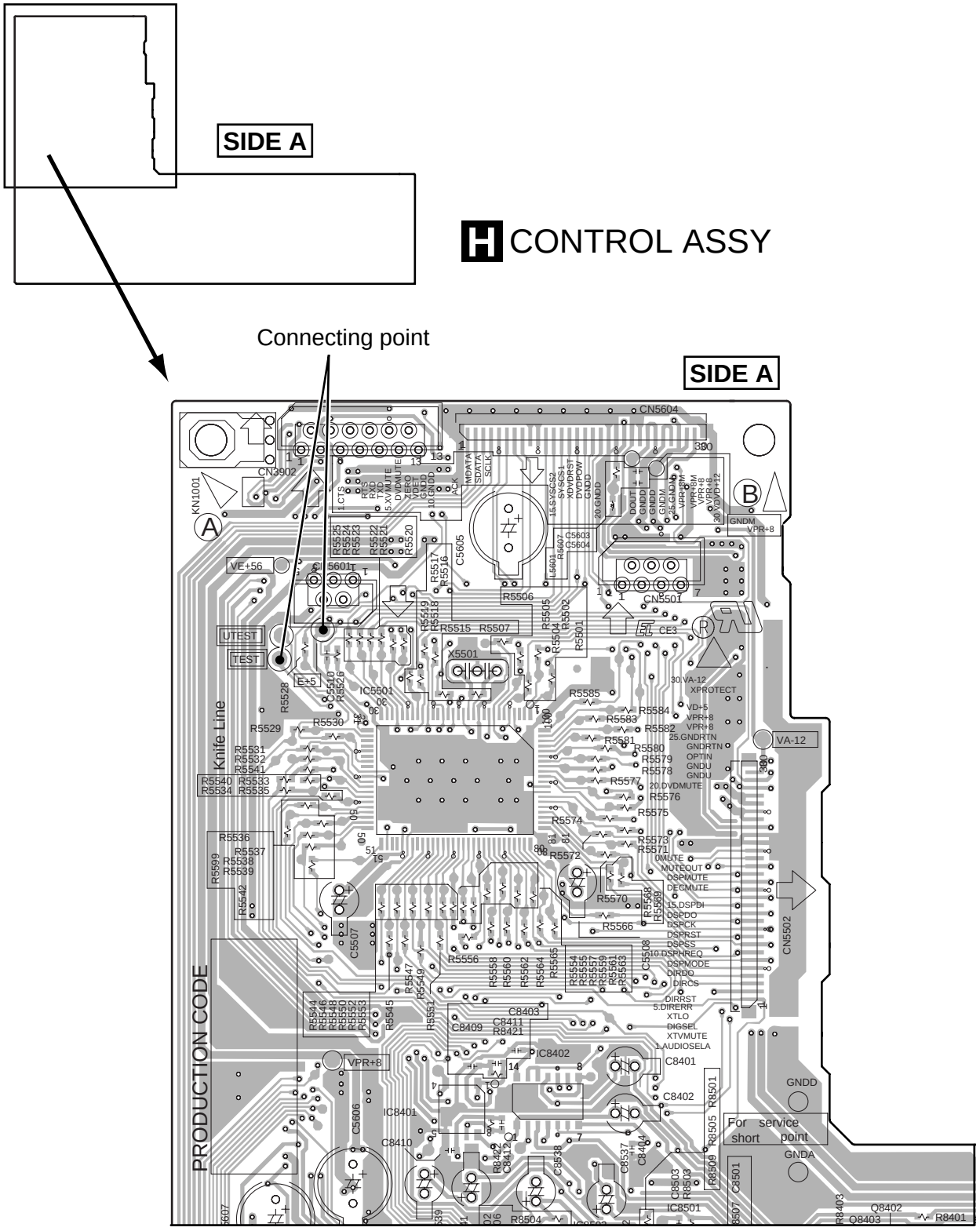
5. Operations during Service Test mode

- Basically, operations in Service Test mode are the same as in Normal mode. However, to clarify that it is in Service Test mode, during this mode, when functions are changed, the indications on the LCD display become as follows:

[Functions]	[Indications on the LCD display]
DVD/CD	`DV SERVICE`
TUNER	`TX SERVICE`
LINE1 ANA	`L1a SERVICE`
LINE1 DIG	`L1d SERVICE`

[Functions]	[Indications on the FL display]
LINE2 ANA	`L2a SERVICE`
LINE2 DIG	`L2d SERVICE`
TV	`TV SERVICE`

■ Service Test mode connecting point



7.1.7 ID NUMBER AND DATA SETTING

Caution:
For the DVD players compatible with DVD-RW, for playback of a DVD-RW disc (CPRM), it is necessary that an individual ID number and ID data are set for each player. If the ID number and ID data be not properly set in the manner described below, future operations cannot be guaranteed. The ID number is written on the yellow label at the rear panel of the player.
If there is no yellow label, before downloading FLASH ROM, take note of the ID number set following the procedures outlined in "ID Number Confirmation Mode" on the next page.

Note: Enter ID numbers while the unit is in Stop mode so that the values set will be immediately written to the flash ROM. The following operations are all made with the TEST MODE remote control unit (GGF1381).

■ ID Number Input Mode

① To enter ID Number Input Mode, with no ID number set, such as in a case of immediately after upgrading the firmware, press the ESC key then the STEREO key.

Note: If a previous ID number and ID data, such as a factory-preset ID number and ID data, are maintained, the unit enters ID Number Confirmation Mode when the above keys are pressed. However, if only an ID number is maintained, the unit enters ID Data Input Mode.

② Enter a 9-digit ID number. The ID number is also displayed on the LCD display.

③ By pressing the CLEAR key without having input a number, you can exit this mode. Each press of this key after a number has been input deletes one digit.

```
[Player's ID Number Setting]
 ID Number ?
②> - - - - - - - - -

③<CLEAR>  Exit


 Input ID Number !
```

④ After entering all 9 digits, if you press the PLAY key, the unit enters Compare mode. Enter the same ID number again. Only if your two input numbers match, the ID number is set. Compare mode helps eliminate mistyping of the ID number.

Note: If you press the PLAY button before inputting a 9-digit ID number, the unit returns to Step ② without doing anything else.

⑤ After entering all 9 digits, if you press the SEARCH key, the unit unconditionally sets the input number as the ID number. Then the unit automatically enters Player's Data Input Mode. (The SEARCH key is not accepted after all 9 digits have been entered.)

```
[Player's ID Number Setting]
 ID Number ?
 > 0 0 0 0 0 0 0 0 1   OK ?

④<PLAY>      Compare Mode
⑤<SEARCH>  Enter

 Input ID Number !
```

⑥ This display appears when the PLAY key is pressed in Step 4. Enter a 9-digit number to compare. The number is also displayed on the LCD display.

⑦ By pressing the CLEAR key without having input a number, the unit returns to Step ② without doing anything else. Each press of this key after a number has been input deletes one digit.

```
[Player's ID Number Setting]
 ID Number ?
    0 0 0 0 0 0 0 0 1
 Compare
⑥> * * * * * * * * *


 Input ID Number !
```

⑧ After entering all 9 digits, if you press the PLAY key, the unit compares the numbers input in Steps ② and ⑥, and only if the numbers match, that number is set as the ID. Then the unit automatically enters ID DATA Input Mode. If the numbers do not match, the disc tray is opened, and the unit exits ID Number Input Mode.

Note: If you press the PLAY button before inputting a 9-digit ID number, the unit returns to Step ⑥ without doing anything else.

```
[Player's ID Number Setting]
 ID Number ?
    0 0 0 0 0 0 0 0 1
 Compare
  > 0 0 0 0 0 0 0 0 1 OK?

⑧<PLAY>  Enter

 Input ID Number !
```

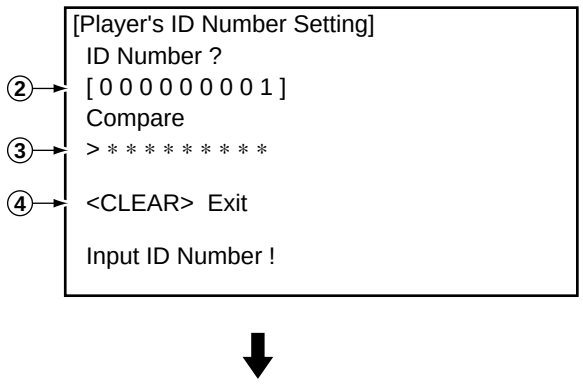
ID Number Confirmation Mode

① To enter ID Number Confirmation Mode after the ID number and the ID data are set, press the ESC key then the STEREO key.

② The ID number already set is displayed.
(It is also displayed on the LCD display.)

③ Enter a 9-digit number for comparison. This is not required when you only wish to check the ID number visually.
(The number is also displayed on the LCD display.)

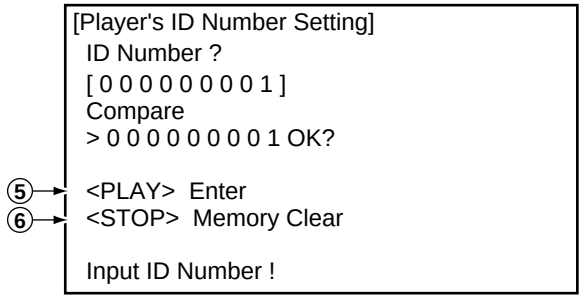
④ By pressing the CLEAR key without having input a number, you can exit this mode. Each press of this key after a number has been input deletes one digit.



⑤ After entering all 9 digits, if you press the PLAY key, the unit compares the number entered in Step ② with the ID number set, and only if the numbers match, the unit automatically exits ID Number Confirmation Mode. If an ID data has not been entered, the unit enters ID DATA Input Mode. If the numbers do not match, the disc tray is opened, and the unit exits ID Number Confirmation Mode.

Note: If you press the PLAY button before inputting a 9-digit ID number, the unit returns to Step ④ without doing anything else.

⑥ After entering all 9 digits, if you press the STOP key, the unit compares the number entered in Step ③ with the ID number set, and only if the numbers match, the unit automatically deletes the ID number and exits this mode. If the numbers do not match, the disc tray is opened, and the unit exits this mode. (The STOP key is not accepted after all 9 digits have been entered.)



• Indication of an ID number already set

An ID number already set is displayed in the following cases:

1) When the ESC key then the CLEAR key are pressed, user settings are cleared, then the ID number set is displayed on the screen. In this case, the ID number is not displayed on the LCD display.
2) When the unit enters ID Number Confirmation Mode by your pressing the ESC key then the STEREO key, the ID number set is displayed. In this case, the ID number is also displayed on the LCD display.
If you only need to confirm the ID number, you can exit this mode by pressing the CLEAR key or turning off the power.

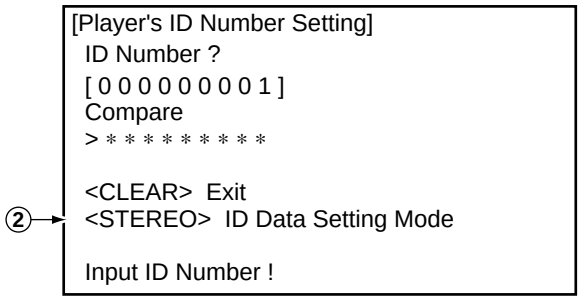
• Indication when no ID number is set

If no ID number is set, the message "No ID Number!" flashes on the screen and LCD display for a few seconds after the power is turned on or during Stop mode.

ID DATA Input Mode

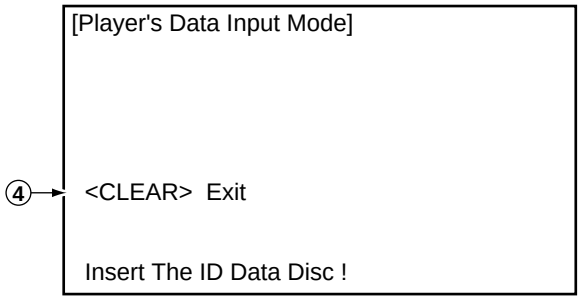
① To enter ID DATA Input Mode, with the ID number set, press the ESC key then the STEREO key.

② When the STEREO key is pressed, the unit enters ID DATA Input Mode.



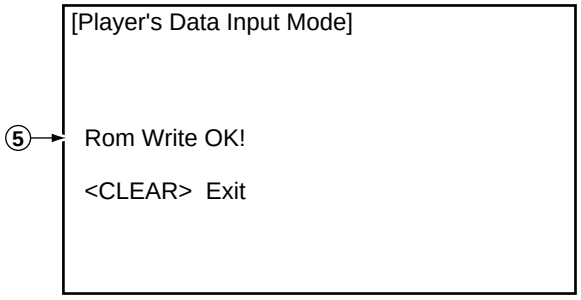
③ If the DVD DATA DISC (GGV1085) is loaded in this mode, the unit automatically starts reading the data.
(If the ID DISC has already been loaded, the unit does not start reading the data. In this case, open then close the tray.)

④ To exit this mode, press the CLEAR key. While data are being read from the DVD DATA DISC (GGV1085), you cannot exit this mode.

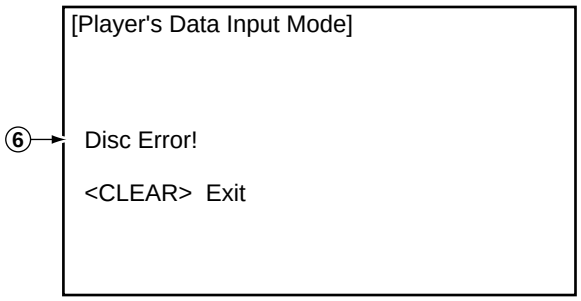


⑤ When writing of the data read from the disc to flash ROM is completed, "Rom Write OK!" is displayed. After seeing this message, you can exit this mode by pressing the CLEAR key.

Note: Whether or not the data have been written to flash ROM can be confirmed by watching for the message "Rom Write OK!" being displayed after the disc is read.



⑥ If the data cannot be read from the disc, "Disc Error!" is displayed on the screen, and the disc is ejected.



• Indication when the data have not been set
If no ID data are set after the ID number is changed, the message "NO ID DATA" flashes on the screen and LCD display for a few seconds after the power is turned on or during Stop mode.

7.1.8 TROUBLE SHOOTING

Microcomputer Section (CONTROL Assy : IC5501)

Symptom	Possible Cause	Check Method
• The unit cannot be turned on.	The microcomputer was not reset.	Check if the level of the terminal XRESET (Pin 8) is "H." If it is not, check the RESET circuit.
	The AC pulse is not input.	Check if the AC pulse is input to Pin 4 of the AC input terminal. If it is not, check the AC pulse generation circuit.
	The oscillation circuit of the microcomputer does not function.	The microcomputer or the oscillation circuit is broken. Change the microcomputer or the oscillation circuit.
The unit shuts itself off soon after it is turned on.	• If the Function is DVD, the voltage of the VDET input (Pin 17) is either 0.5 Vdd* or less or 0.85 Vdd* or more. • The voltage of the PROTECT input (Pin 22) is 0.71 Vdd* or less.	If the voltage at Pin 17 of the VDET terminal of the microcomputer is either 0.5 Vdd or less or 0.85 Vdd or more, adjust so that it stays between 0.5 and 0.85 Vdd.
• DVD does not operate at all. • Time is not displayed in LCD display during DVD function.	Communication with the DVD microcomputer has not been established.	• Check that the terminal (Pins 23-25, 29, and 30) for communication with the DVD microcomputer is live, and if it is not, check if the flexible cable is disconnected. • Check if an "H" signal is output to Pin 93 of the XDVDRST terminal.
All operation keys are disabled.	The unit recognizes that an operation key has already been pressed.	If no operation key has been pressed, check if the voltage at Pins 18 of the KEY input terminal is 5 V. If it is not, check if the operation switch on the line is in failure.

* Vdd= Approx. 5V (depending on the unit)
ex.) 0.85Vdd= 0.85 × 5 (V)
= 4.25 (V)

DVD Section

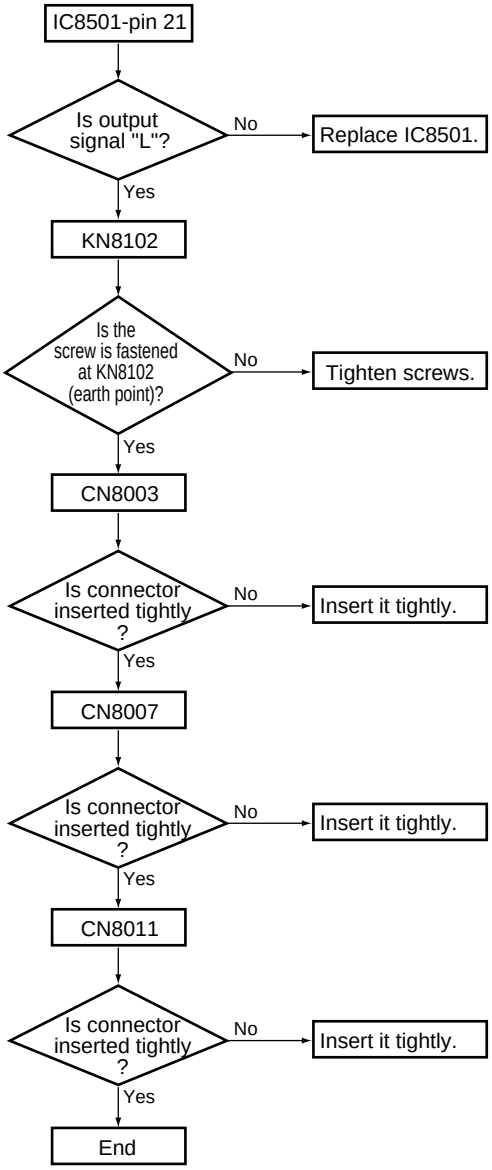
No.	Symptoms	Diagnosis Contents	Possible Defective Points
1	An opening screen is not displayed on the monitor (The LCD display lights. The mechanism does not work.)	Is the level at both IC5501-pin 93 (XDVDRST) and pin 1(DVD ON/OFF) on the CONTROL Assy "H" ?	µcom (CONTROL IC5501)
		Check the voltage of CN901-pin 28 and 29 (VPR+8) on the DVDM Assy.	DVDM Assy CN901
		Check that the following voltages are output : IC411-pin 3 : 1.8V, IC421-pin 3 : 1.8V and IC431-pin 1 : 5V on the DVDM Assy	Each regulator on the DVDM Assy
		Are resonators (27MHz, 20MHz) on the DVDM Assy oscillating ?	Crystal resonator (DVDM Assy X601 and X301)
		Refer to contents of an FE error displayed on the LCD display. (SRAM defectiveness, I2C communication line defectiveness, etc.)	FRONT END IC (DVDM IC301)
		• Is a signal input into IC601-pin 132 (CE3) on the DVDM Assy ? (Is a signal fluctuating for several seconds after the power is turned on ?) → Communication with flash ROM • Are the signals input into IC602-pin 16 (SMIWE), pin 19 (SMICS0) and pin 38 (SMICLK) on the DVDM Assy ? (Is a signal fluctuating ?) → Communication with flash ROM	• BACK END IC (DVDM IC601) • Flash ROM (DVDM IC603) • 64M SDRAM (DVDM IC602)
		Is a signal output from IC603-pin 28 (CPU_OE) on the DVDM Assy? (Is a signal fluctuating for several seconds after the power is turned on ?)	• BACK END IC (DVDM IC601) • Flash ROM (DVDM IC603)
		Is a signal input into IC5501-pin 67 (DVDACK) on the CONTROL Assy ? (Is a signal fluctuating ?)	µcom (CONTROL IC5501)
		Is a signal output from IC5501-pin 29 and 30 (SYS_1, 2) on the AF Assy ? (Is a signal fluctuating in the range of 0-5V ?)	µcom (CONTROL IC5501)
		Are the signals output from IC5501-pin 23, 24 and 25 on the CONTROL Assy? (in the range of 0-5V)	µcom (AF IC5501) – BACK END IC (DVDM IC601) communication line
2	An opening screen is not displayed on the monitor (The LCD display lights. The mechanism does not work.)	Check the video signal path between BACK END IC (DVDM IC601) and video-out terminal (see the block diagram)	DVDM Assy • Video circuit • after BACK END IC (IC601)
3	A tray cannot be opened. (An opening screen is displayed on the monitor)	• Are wires of CN103 on the DVDM Assy disconnected or damaged ?	Connector / wire LOADING SW (LOAB S101)
		• Is a LOAD-DRVC signal reaching ? • Does the voltage of CN105 pin 1 change by pressing the Inside switch	BACK END IC (DVDM IC601) Inside switch

No.	Symptoms	Diagnosis Contents	Possible Defective Points
4	Playback impossible (no focusing)	Are the signals output from IC101-pin 34 (F_DRV) and pin 35 (F_RTN) on the DVDM Assy ?	FTS Driver IC (DVDM IC101)
		Does 650-nm LD emit light ? Does a pickup lens move up / down ? Does an actuator spring bend ?	Pickup
		• Are plastic parts damaged? Or is a shaft detached? • Is the turntable detached or tilted?	Mechanism section
		Is flexible cable of CN101 on the DVDM Assy disconnected or damaged ?	Flexible cable / connector
		Is signal output from IC301-pin 33 (FACT) on the DVDM Assy ? (Device control of about 2.6 V is output usually. It is fluctuated by about ± 100 mV with focus up / down.)	FRONT END IC (DVDM IC301)
5	Playback impossible (Spindle does not turn)	Are the signals output from IC101-pin 12 (A3), pin 13 (A2) and pin 14 (A1) on the DVDM Assy ? Is pin 41 fixed LOW and is pin 38 fixed HIGH ?	FTS Driver IC (DVDM IC101)
		Is there any part detached from the spindle motor? Or Is there any foreign object lodged in it?	Mechanism section (Spindle motor)
		Are wires of CN105 (DVDM Assy) disconnected or damaged ?	Flexible cable / connector
		Is signal output from IC301-pin 44 (SPDL_PDM) on the DVDM Assy ?	FRONT END IC (DVDM IC301)
6	Playback impossible (Playback stops)	Does 650-nm LD deteriorate ? If the voltage at both ends of R201 on the DVDM Assy is 0.7 V or more, the 650-nm LD is definitely deteriorated.	650-nm LD deteriorated. (When playback of a DVD is impossible)
		Does 780-nm LD deteriorate ? If the voltage at both ends of R211 on the DVDM Assy is 1.5 V or more, the 780-nm LD is definitely deteriorated.	780-nm LD deteriorated. (When playback of CD is impossible)
		Is there abnormality in FG waveform ?	FG output : FTS Driver IC (DVDM IC101)
		Are there scratches or dirt on the disc ?	Disc
7	Picture disturbance during playback (block noise, freeze, other)	Are there scratches or dirt on the disc ?	Disc
		Is there a problem with the format of the disc?	Disc
8	No sound (Picture is normal)		
		Is signal output from DOUT signal (CN901-pin 21) on the DVDM Assy ?	BACK END IC (DVDM IC601)

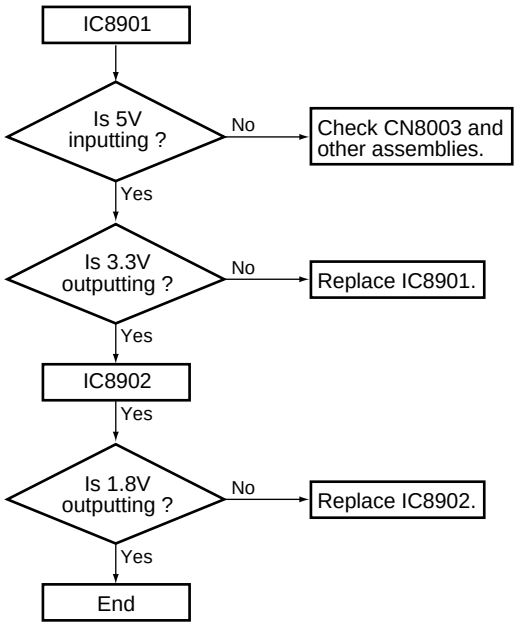
7.1.9 DSP TROUBLE SHOOTING

- When a sound is not out in the surround mode with the digital signal input.
- Suppose C,R parts to be poor contact and that is not damaged.
- This shows failure analysis of DSP Assy.

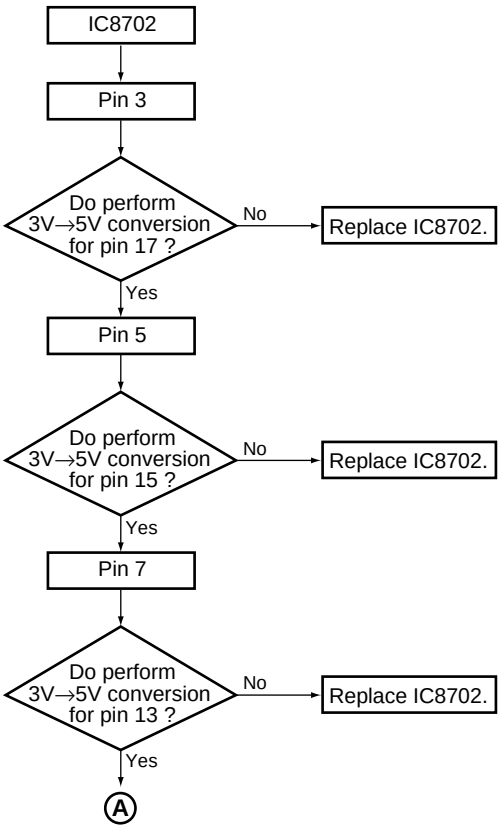
Step 1

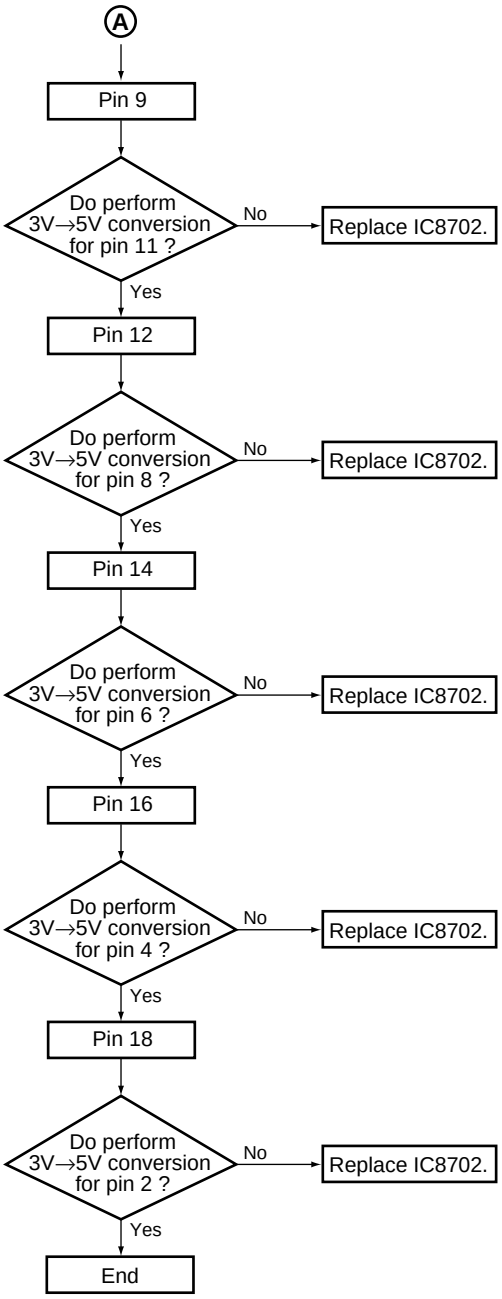


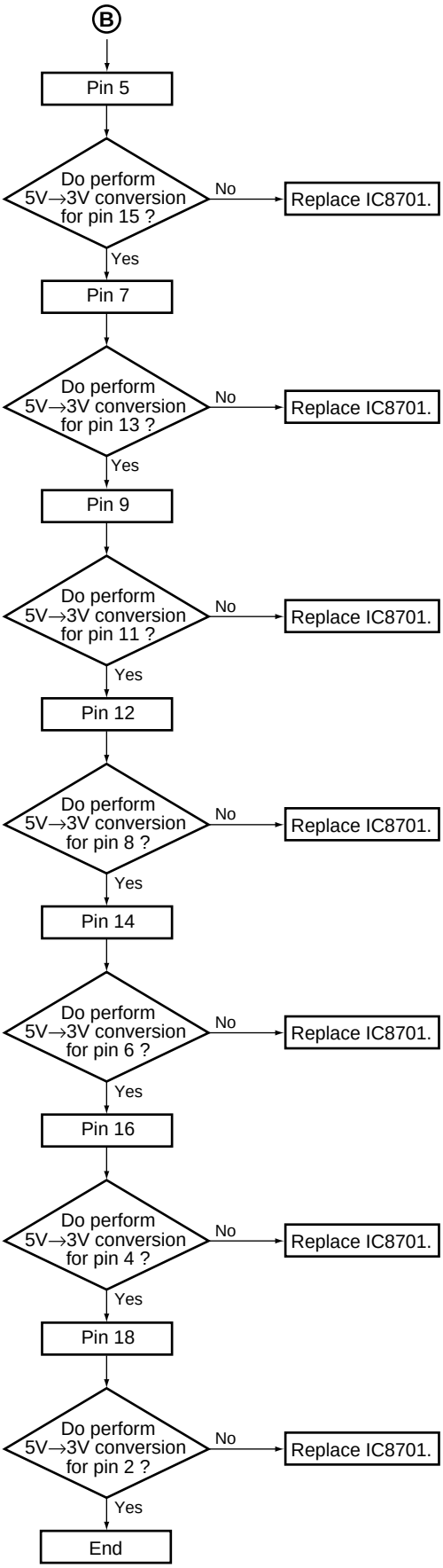
Step 2



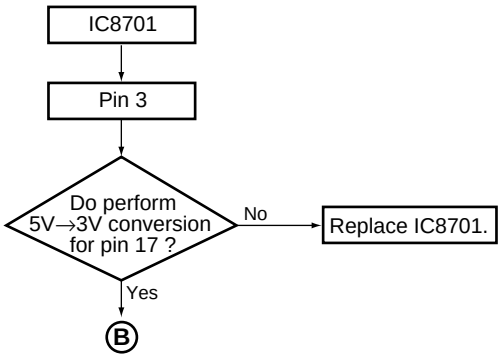
Step 3



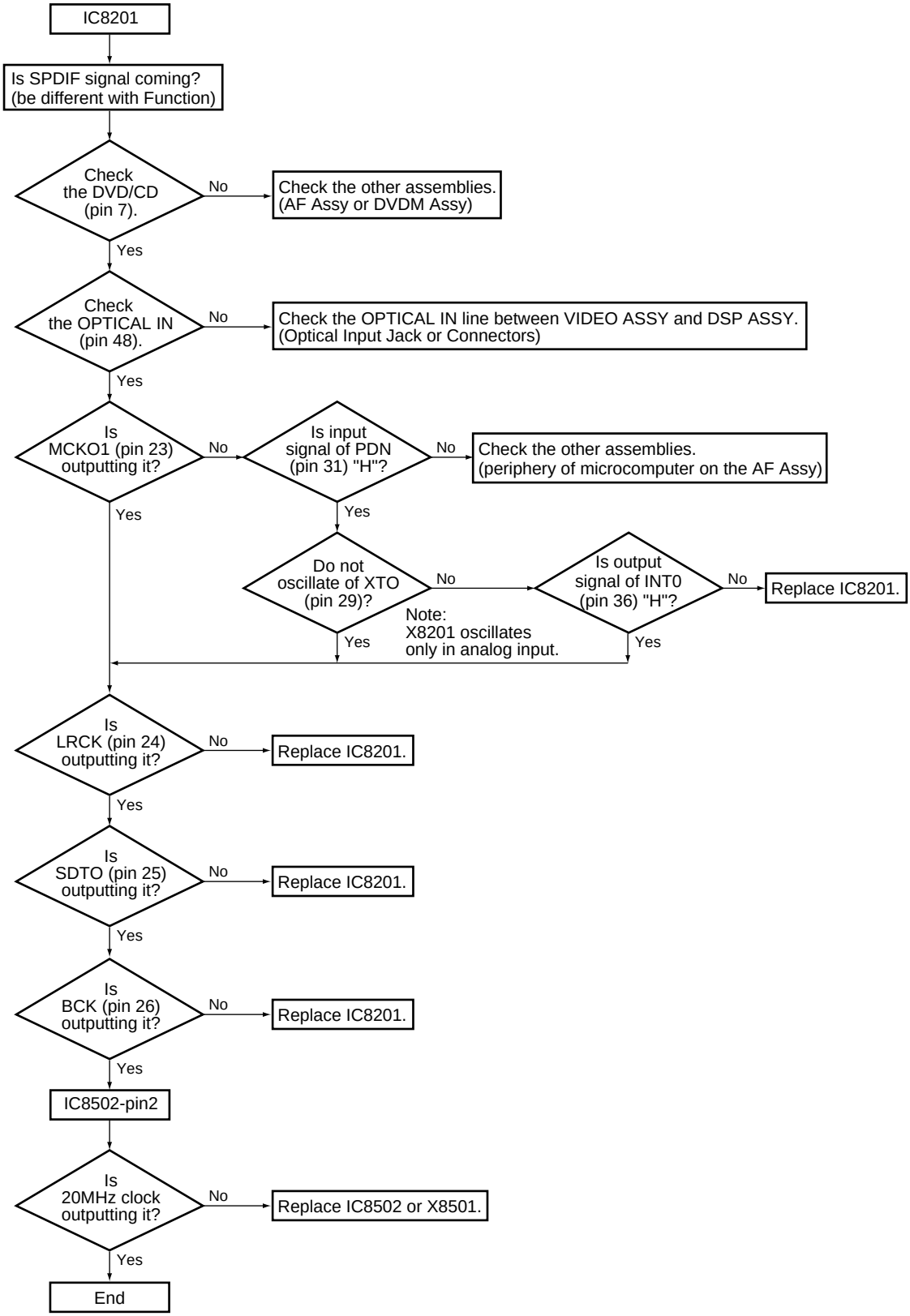

A
Pin 9
Do perform 3V→5V conversion for pin 11 ?
No
Replace IC8702.
Yes
Pin 12
Do perform 3V→5V conversion for pin 8 ?
No
Replace IC8702.
Yes
Pin 14
Do perform 3V→5V conversion for pin 6 ?
No
Replace IC8702.
Yes
Pin 16
Do perform 3V→5V conversion for pin 4 ?
No
Replace IC8702.
Yes
Pin 18
Do perform 3V→5V conversion for pin 2 ?
No
Replace IC8702.
Yes
End


B
Pin 5
Do perform 5V→3V conversion for pin 15 ?
No
Replace IC8701.
Yes
Pin 7
Do perform 5V→3V conversion for pin 13 ?
No
Replace IC8701.
Yes
Pin 9
Do perform 5V→3V conversion for pin 11 ?
No
Replace IC8701.
Yes
Pin 12
Do perform 5V→3V conversion for pin 8 ?
No
Replace IC8701.
Yes
Pin 14
Do perform 5V→3V conversion for pin 6 ?
No
Replace IC8701.
Yes
Pin 16
Do perform 5V→3V conversion for pin 4 ?
No
Replace IC8701.
Yes
Pin 18
Do perform 5V→3V conversion for pin 2 ?
No
Replace IC8701.
Yes
End

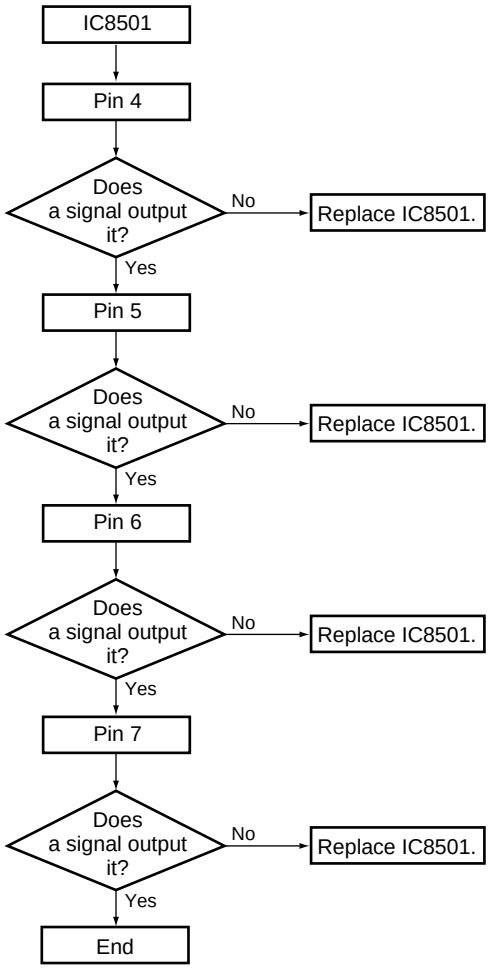
Step 4


IC8701
Pin 3
Do perform 5V→3V conversion for pin 17 ?
No
Replace IC8701.
Yes
B

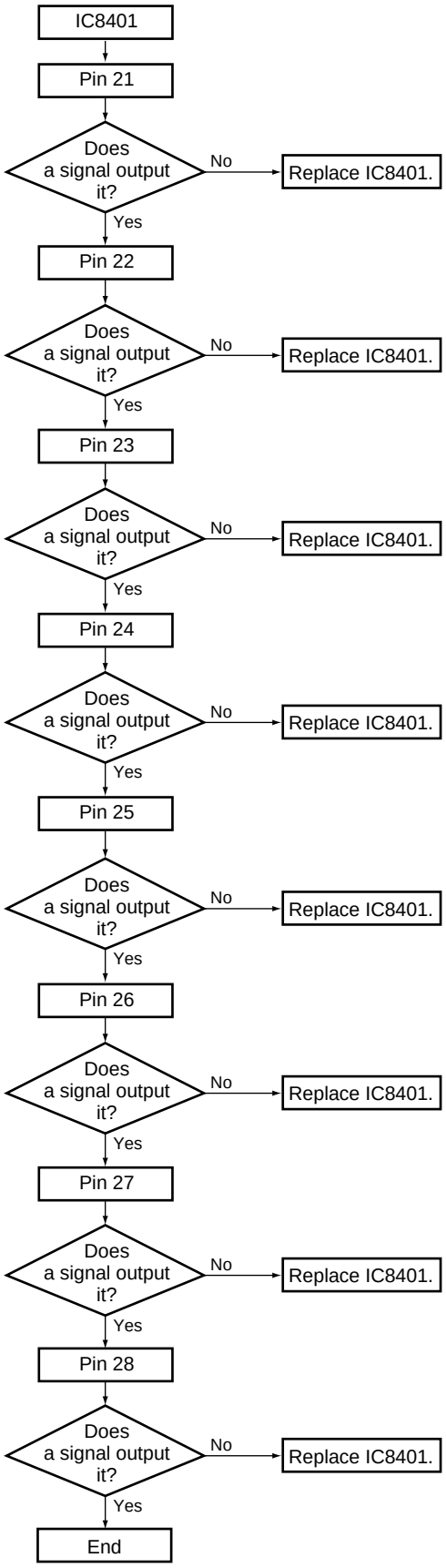
Step 5


IC8201
Is SPDIF signal coming?
(be different with Function)
Check
the DVD/CD
(pin 7).
No
Check the other assemblies.
(AF Assy or DVDM Assy)
Yes
Check
the OPTICAL IN
(pin 48).
No
Check the OPTICAL IN line between VIDEO ASSY and DSP ASSY.
(Optical Input Jack or Connectors)
Yes
Is
MCKO1 (pin 23)
outputting it?
No
Is input
signal of PDN
(pin 31) "H"?
No
Check the other assemblies.
(periphery of microcomputer on the AF Assy)
Yes
Yes
Do not
oscillate of XTO
(pin 29)?
No
Is output
signal of INT0
(pin 36) "H"?
No
Replace IC8201.
Note:
X8201 oscillates
only in analog input.
Yes
Yes
Is
LRCK (pin 24)
outputting it?
No
Replace IC8201.
Yes
Is
SDTO (pin 25)
outputting it?
No
Replace IC8201.
Yes
Is
BCK (pin 26)
outputting it?
No
Replace IC8201.
Yes
IC8502-pin2
Is
20MHz clock
outputting it?
No
Replace IC8502 or X8501.
Yes
End

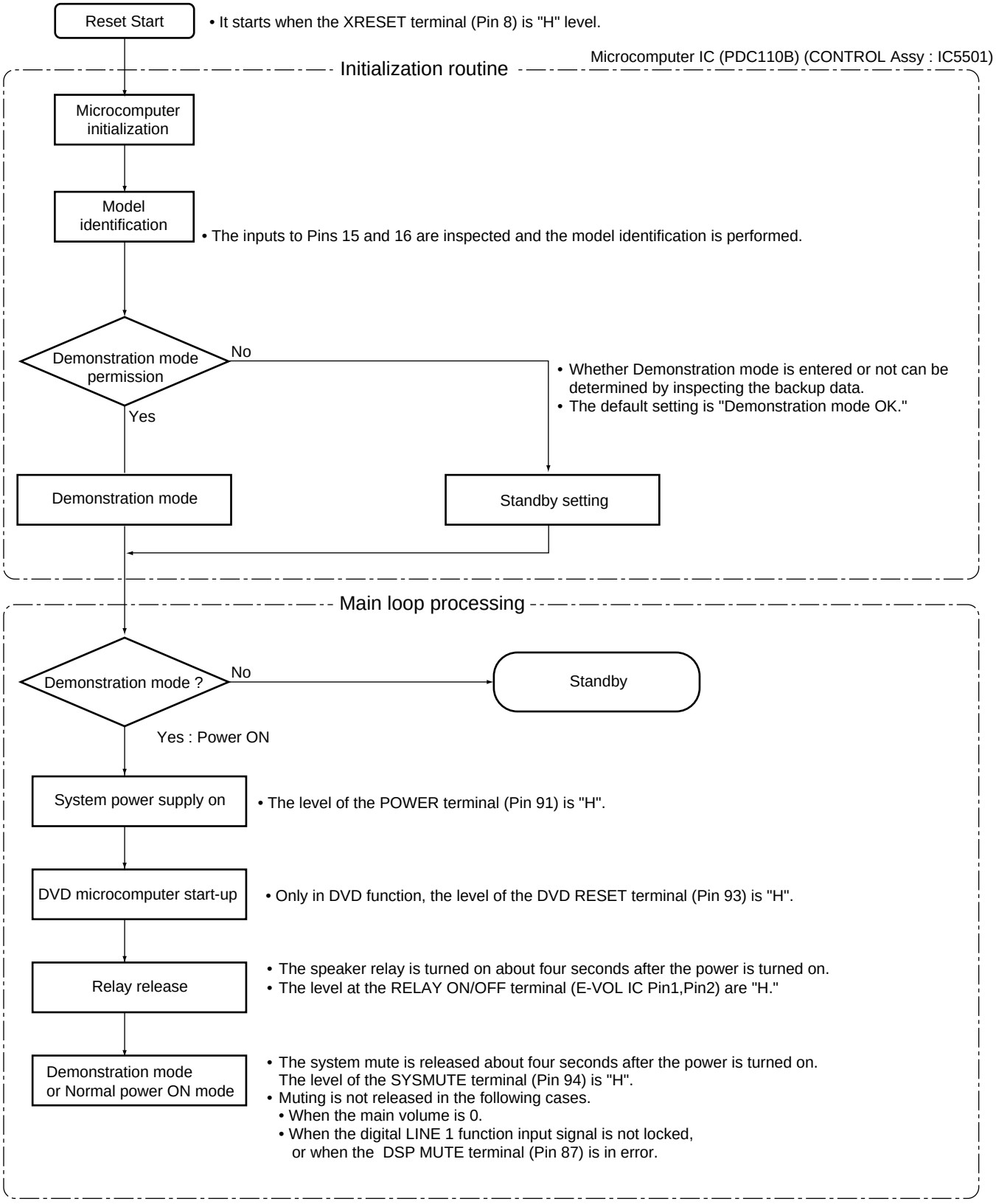
Step 6


IC8501
Pin 4
Does a signal output it?
No
Replace IC8501.
Yes
Pin 5
Does a signal output it?
No
Replace IC8501.
Yes
Pin 6
Does a signal output it?
No
Replace IC8501.
Yes
Pin 7
Does a signal output it?
No
Replace IC8501.
Yes
End

Step 7

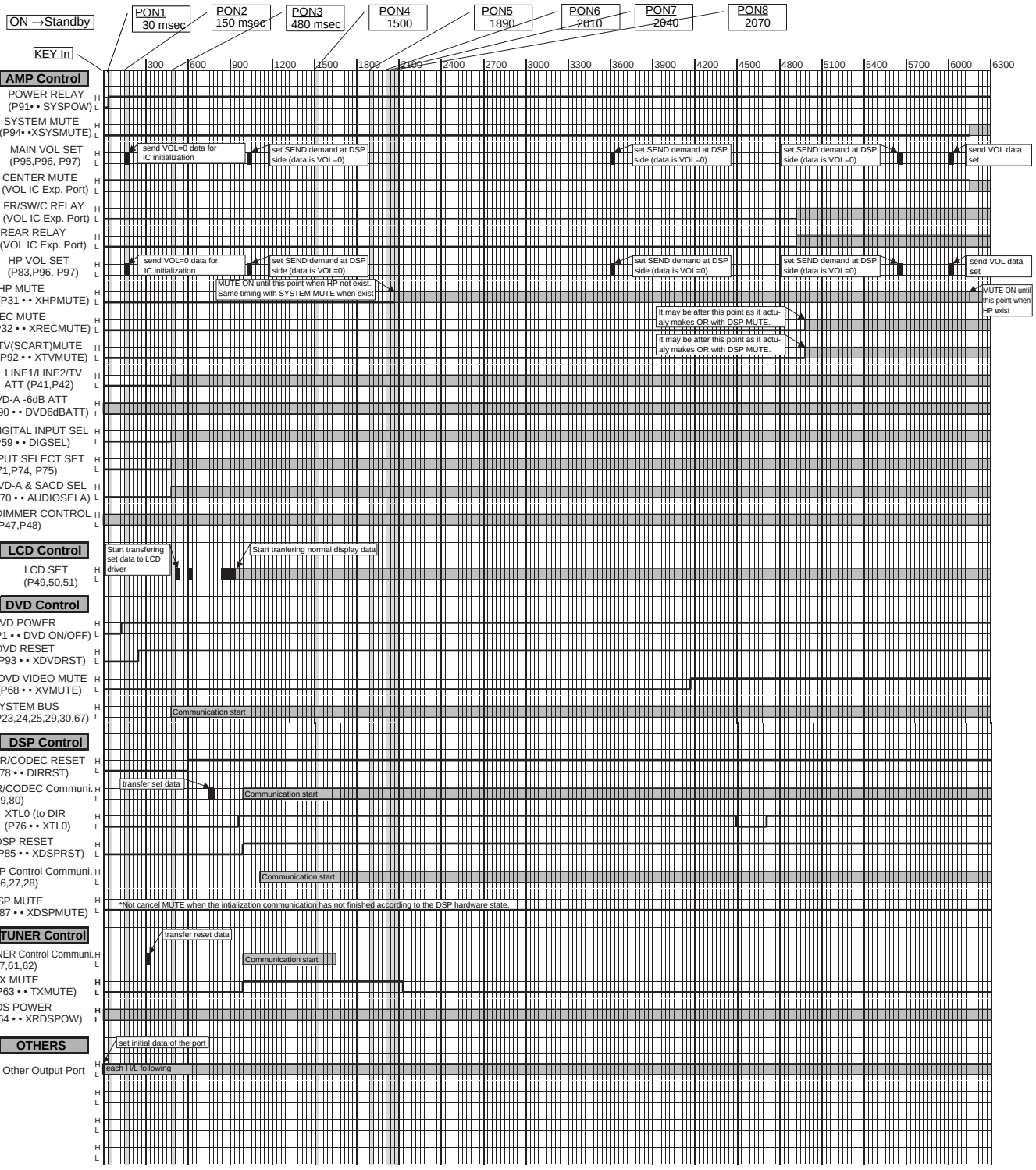

IC8401
Pin 21
Does a signal output it?
No
Replace IC8401.
Yes
Pin 22
Does a signal output it?
No
Replace IC8401.
Yes
Pin 23
Does a signal output it?
No
Replace IC8401.
Yes
Pin 24
Does a signal output it?
No
Replace IC8401.
Yes
Pin 25
Does a signal output it?
No
Replace IC8401.
Yes
Pin 26
Does a signal output it?
No
Replace IC8401.
Yes
Pin 27
Does a signal output it?
No
Replace IC8401.
Yes
Pin 28
Does a signal output it?
No
Replace IC8401.
Yes
End

7.1.10 SEQUENCE AFTER POWER ON


Reset Start
• It starts when the XRESET terminal (Pin 8) is "H" level.
Microcomputer IC (PDC110B) (CONTROL Assy : IC5501)
Initialization routine
Microcomputer initialization
Model identification
• The inputs to Pins 15 and 16 are inspected and the model identification is performed.
Demonstration mode permission
No
Yes
• Whether Demonstration mode is entered or not can be determined by inspecting the backup data.
• The default setting is "Demonstration mode OK."
Demonstration mode
Standby setting
Main loop processing
Demonstration mode ?
No
Standby
Yes : Power ON
System power supply on
• The level of the POWER terminal (Pin 91) is "H".
DVD microcomputer start-up
• Only in DVD function, the level of the DVD RESET terminal (Pin 93) is "H".
Relay release
• The speaker relay is turned on about four seconds after the power is turned on.
• The level at the RELAY ON/OFF terminal (E-VOL IC Pin1,Pin2) are "H."
Demonstration mode or Normal power ON mode
• The system mute is released about four seconds after the power is turned on. The level of the SYSMUTE terminal (Pin 94) is "H".
• Muting is not released in the following cases.
• When the main volume is 0.
• When the digital LINE 1 function input signal is not locked, or when the DSP MUTE terminal (Pin 87) is in error.

- If no pulse is input to the AC terminal (Pin 4) for about 60 msec, the microcomputer becomes in Memory Backup mode, it will not do any processing.
- The unit will recover from Memory Backup mode if a reset command is input to the XRESET terminal (Pin 8).

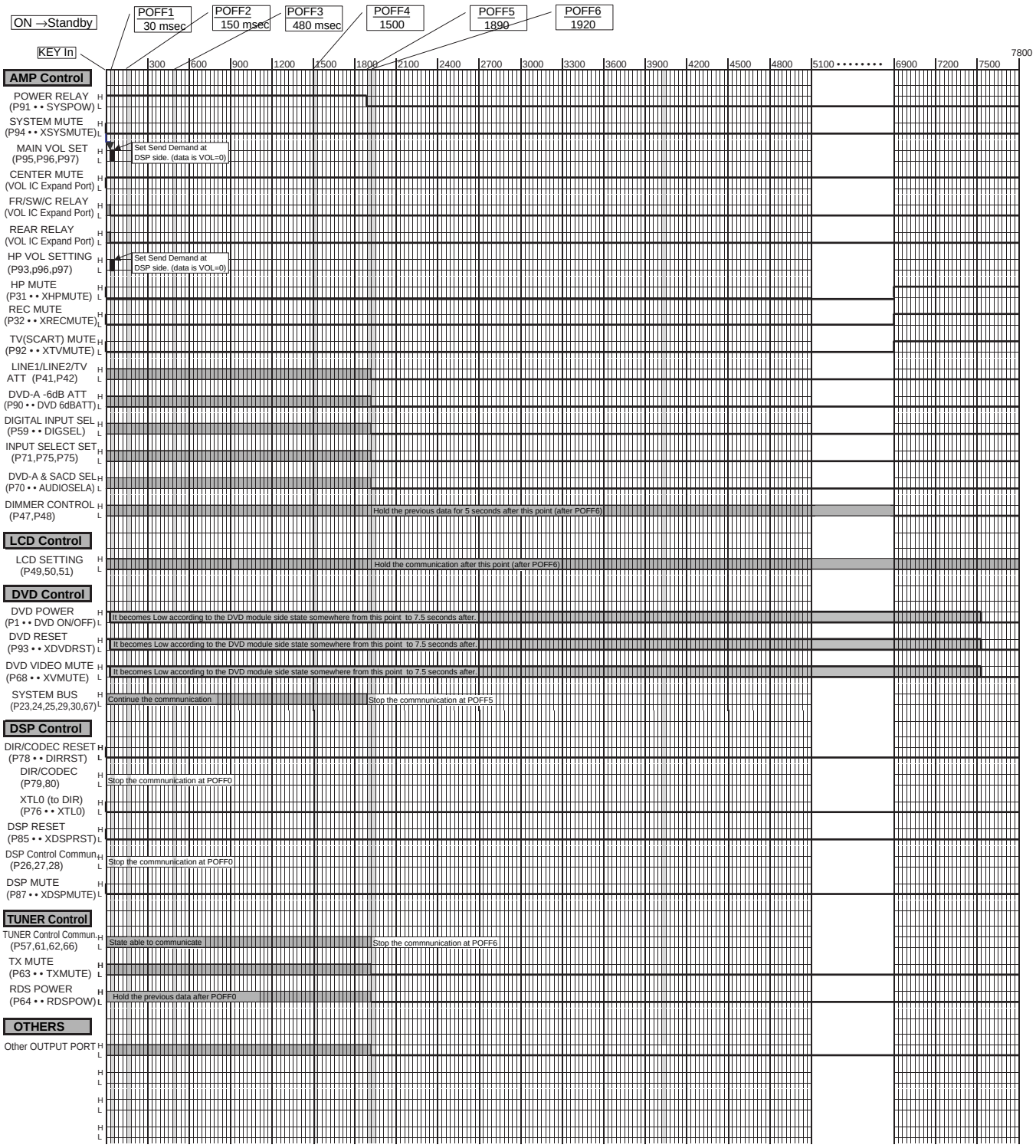
[STANDBY ON TIMING CHART]


ON →Standby
PON1 30 msec
PON2 150 msec
PON3 480 msec
PON4 1500
PON5 1890
PON6 2010
PON7 2040
PON8 2070
KEY In
300 600 900 1200 1500 1800 2100 2400 2700 3000 3300 3600 3900 4200 4500 4800 5100 5400 5700 6000 6300
AMP Control
POWER RELAY (P91• • SYSPOW)
SYSTEM MUTE (P94• •XSYSMUTE)
MAIN VOL SET (P95,P96, P97)
send VOL=0 data for IC initialization
set SEND demand at DSP side (data is VOL=0)
set SEND demand at DSP side (data is VOL=0)
set SEND demand at DSP side (data is VOL=0)
send VOL data set
CENTER MUTE (VOL IC Exp. Port)
FR/SW/C RELAY (VOL IC Exp. Port)
REAR RELAY (VOL IC Exp. Port)
HP VOL SET (P83,P96, P97)
HP MUTE (P31 • • XHPMUTE)
MUTE ON until this point when HP not exist.
Same timing with SYSTEM MUTE when exist
MUTE ON until this point when HP exist
REC MUTE (P32 • • XRECMUTE)
TV(SCART)MUTE (P92 • • XTVMUTE)
It may be after this point as it actu-aly makes OR with DSP MUTE.
LINE1/LINE2/TV ATT (P41,P42)
DVD-A -6dB ATT (P90 • • DVD6dBATT)
DIGITAL INPUT SEL (P59 • • DIGSEL)
INPUT SELECT SET (P71,P74, P75)
DVD-A & SACD SEL (P70 • • AUDIOSELA)
DIMMER CONTROL (P47,P48)
LCD Control
Start transfering set data to LCD driver
Start tranfering normal display data
LCD SET (P49,50,51)
DVD Control
DVD POWER (P1 • • DVD ON/OFF)
DVD RESET (P93 • • XDVDRST)
DVD VIDEO MUTE (P68 • • XVMUTE)
SYSTEM BUS (P23,24,25,29,30,67)
Communication start
DSP Control
DIR/CODEC RESET (P78 • • DIRRST)
transfer set data
DIR/CODEC Communi. (P79,80)
Communication start
XTL0 (to DIR (P76 • • XTL0)
DSP RESET (P85 • • XDSPRST)
DSP Control Communi. (P26,27,28)
Communication start
DSP MUTE (P87 • • XDSPMUTE)
*Not cancel MUTE when the intialization communication has not finished according to the DSP hardware state.
TUNER Control
transfer reset data
TUNER Control Communi. (P57,61,62)
Communication start
TX MUTE (P63 • • TXMUTE)
RDS POWER (P64 • • XRDSPOW)
OTHERS
set initial data of the port
Other Output Port
each H/L following

[STANDBY ON SEQUENCE]

Function	Set Time from Former Step	Passing Time	Detail about the Control
SY_PON0	————	0 msec	**Start the POWER ON Each Initial Setting ①** • Set the MASK FLAG of all keys • Set the MASK FLAG of normal key • POWER Lines MUTE ON (SYSYTEM MUTE REQUEST) • MUTING FLAG CLEAR (SYSTEM MUTE REQUEST) • VOLUME Lines MUTE REQUEST CLEAR (SYSTEM MUTE REQUEST) • DSP MUTE REQUEST CLEAR(SYSTEM MUTE REQUEST) • AMP Lines MUTE REQUEST CLEAR (SYSTEM MUTE REQUEST) • TUNER MUTE REQUEST CLEAR (SYSTEM MUTE REQUEST) • EMERGENCY POWER OFF FLAG CLEAR • LCD Driver STAND-BY • Set the TIMER for canceling the SP-Relay (5 sec) • Set the TIMER for starting the PROTECT Process (1.5 sec) • PROTECT FLAG CLEAR • REC MUTE ON (Pin No.32 : L) • HEADPHONE MUTE ON (Pin No.31 : L)
SY_PON1	+ 30 msec	30 msec	**Each Initial Setting ②** • SYSTEM POWER ON (Pin No.91 : L) • Set the One-Shot Display of " WELCOME " (display time : 3.5 sec)
SY_PON2	+ 120 msec	150 msec	**Each Initial Setting ③** • Set +5V ON (the Power is stabilized) FLAG • Transfer the initial data to the MAIN VOLUME IC. • Transfer the initial data to the HEADPHONE IC.
SY_PON3	+ 330 msec	480 msec	**Each Initial Setting ④** • Start transfering to the LCD driver if the remote control port data is High. • Set the DIGITAL INPUT (Pin No.59) • Set the INPUT FUNCTION (Selector : BU4051) (Pin No.71,74,75) • Start the BUS communication
SY_PON4	+ 1020 msec	1500 msec	**Each Initial Setting ④**
SY_PON5	+ 390 msec	1890 msec	**Each Initial Setting ⑤**
SY_PON6	+ 120 msec	2010 msec	**Each Initial Setting ⑥**
SY_PON7	+ 30 msec	2040 msec	**Each Initial Setting ⑦** • Clear the MASK FLAG of all keys. • Clear the MASK FLAG of normal key. • POWER Lines MUTE OFF (SYSTEM MUTE REQUEST)
SY_PON8	+ 30 msec	2070 msec	**POWER ON Finished**

[STANDBY OFF TIMING CHART]


ON →Standby
KEY In
POFF1 30 msec
POFF2 150 msec
POFF3 480 msec
POFF4 1500
POFF5 1890
POFF6 1920
300
600
900
1200
1500
1800
2100
2400
2700
3000
3300
3600
3900
4200
4500
4800
5100
6900
7200
7500
7800
AMP Control
POWER RELAY (P91 • • SYSPOW)
SYSTEM MUTE (P94 • • XSYSMUTE)
MAIN VOL SET (P95,P96,P97)
Set Send Demand at DSP side. (data is VOL=0)
CENTER MUTE (VOL IC Expand Port)
FR/SW/C RELAY (VOL IC Expand Port)
REAR RELAY (VOL IC Expand Port)
HP VOL SETTING (P93,p96,p97)
Set Send Demand at DSP side. (data is VOL=0)
HP MUTE (P31 • • XHPMUTE)
REC MUTE (P32 • • XRECMUTE)
TV(SCART) MUTE (P92 • • XTVMUTE)
LINE1/LINE2/TV ATT (P41,P42)
DVD-A -6dB ATT (P90 • • DVD 6dBATT)
DIGITAL INPUT SEL (P59 • • DIGSEL)
INPUT SELECT SET (P71,P75,P75)
DVD-A & SACD SEL (P70 • • AUDIOSELA)
DIMMER CONTROL (P47,P48)
Hold the previous data for 5 seconds after this point (after POFF6)
LCD Control
LCD SETTING (P49,50,51)
Hold the communication after this point (after POFF6)
DVD Control
DVD POWER (P1 • • DVD ON/OFF)
It becomes Low according to the DVD module side state somewhere from this point to 7.5 seconds after.
DVD RESET (P93 • • XDVDRST)
It becomes Low according to the DVD module side state somewhere from this point to 7.5 seconds after.
DVD VIDEO MUTE (P68 • • XVMUTE)
It becomes Low according to the DVD module side state somewhere from this point to 7.5 seconds after.
SYSTEM BUS (P23,24,25,29,30,67)
Continue the commnunication
Stop the commnunication at POFF5
DSP Control
DIR/CODEC RESET (P78 • • DIRRST)
DIR/CODEC (P79,80)
Stop the commnunication at POFF0
XTL0 (to DIR) (P76 • • XTL0)
DSP RESET (P85 • • XDSPRST)
DSP Control Commun (P26,27,28)
Stop the commnunication at POFF0
DSP MUTE (P87 • • XDSPMUTE)
TUNER Control
TUNER Control Commun (P57,61,62,66)
State able to communicate
Stop the commnunication at POFF6
TX MUTE (P63 • • TXMUTE)
RDS POWER (P64 • • RDSPOW)
Hold the previous data after POFF0
OTHERS
Other OUTPUT PORT
H
L

[STANDBY OFF SEQUENCE]

Function	Set Time from Former Step	Passing Time	Detail about the Control
SY_POFF0	————	0 msec	**Start the POWER OFF Each Initial Setting ①** • Set the MASK FLAG of all keys • Set the MASK FLAG of normal key • POWER Lines MUTE ON (SYSYTEM MUTE REQUEST) • MUTING FLAG CLEAR (SYSTEM MUTE REQUEST) • Set the transfer demand of the VOLUME DATA to the DSP module. (The DSP module controls the MAIN VOLUME.) • Set the Counter for not coming DVD POWER OFF information.(20sec) • MENU clear • Clear the demand of One-Shot Display. • Clear the RAM relative to PROTECT if in SERVICE TEST MODE. • Force to set the each data to the Factory Setting state in the TEST MODE except the SERVICE TEST MODE. • Clear the TEST MODE FLAG except the LINE TEST MODE • Clear the RAM FLAG relative to the TIMER. • DEMO CLEAR
SY_POFF1	+ 30 msec	30 msec	**Each Initial Setting ②** • If it is not the Emergency POWER OFF, Set the Admission FLAG of the SP-Realy OFF Check if the DVD is POWER OFF OK
SY_POFF2	+ 120 msec	150 msec	**Each Initial Setting ③**
SY_POFF3	+ 330 msec	480 msec	**Each Initial Setting ④**
SY_POFF4	+ 1020 msec	1500 msec	**Each Initial Setting ④**
SY_POFF5	+ 390 msec	1890 msec	**Each Initial Setting ⑤** • Clear 5V ON (the Power is stabilized) FLAG • SYSTEM POWER OFF (Pin No.91 : L) • DVD DEBUG MODE CLEAR • Finished the BUS communication.
SY_POFF6	+ 30 msec	1920 msec	**POWER OFF Finished** (passes every loop in the POWER OFF) • Clear the MASK FLAG of all keys. • Hold to set the MASK FLAG of normal key • Clear the Emergency POWER OFF FLAG • Clear the Admission FLAG of SP-Relay OFF • POWER Lines MUTE OFF (SYSTEM MUTE REQUEST) • Clear the LINE TEST MODE FLAG • REC MODE OFF • PORT Process in the POWER OFF • Only when the 5 sec after point after the POWER OFF, REC MUTE OFF (Pin No. 32 : H) HEADPHONE MUTE OFF (Pin No.31 : H) TV MUTE OFF (Pin No.92 : H) Set the DIMMER PORT OFF (Pin No. 47,48 : H)

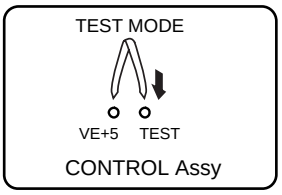
7.1.11 SINGLE OPERATION METHOD

• Please connect DISPLAY UNIT (AXX7163) in order to use Remote Control Unit.

TEST MODE : ON Service TEST mode

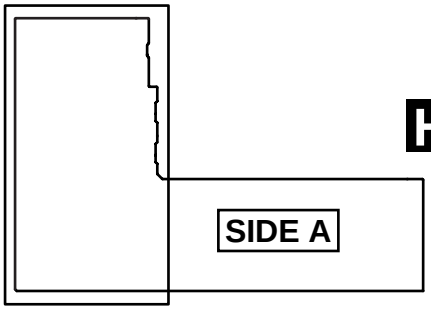
Turn off power switch of DC power supply.

Connect each power supply firmly stabilizing as shown in the figure below and shortcircuit the 3 GND points.

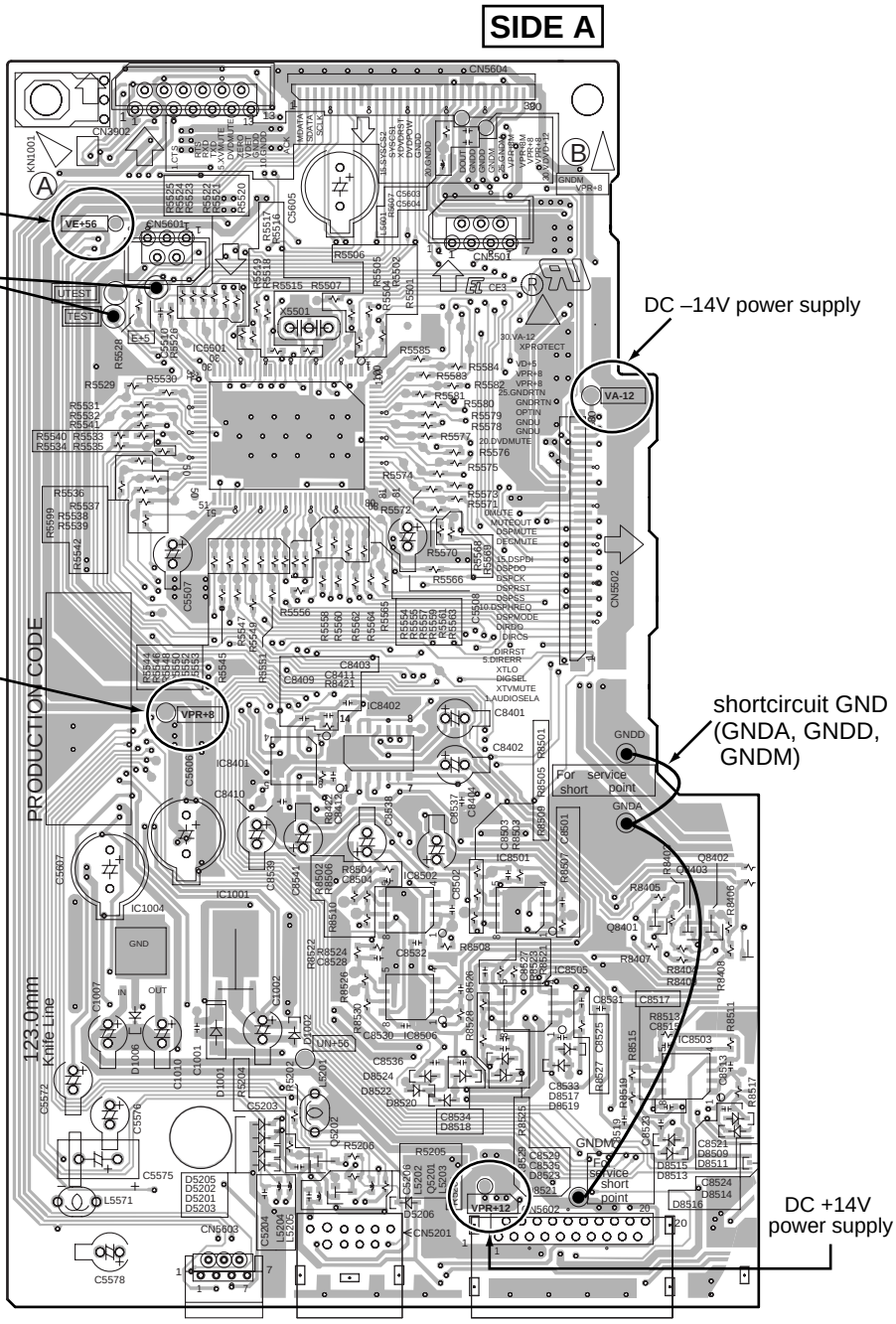


Turn on power switch of DC power supply.

TEST MODE



H CONTROL ASSY



TEST MODE : STOP

Turn off power switch of DC power supply.

7.1.12 PROTECTION CIRCUIT

If the TIMER LED on the front panel flashes, check the protection circuit.
Note: If the protection circuit activates, the unit will not recover for 60 seconds even if the AC power cord is disconnected then reconnected. If you activate Service Test mode, the protection circuit becomes invalid, which makes diagnosis easy. (To activate Service Test mode, while connecting STEST port (IC5501 Pin43) to "+5V", connect AC power cord.)
There are three types of operations for the protection circuit, which are indicated on the FL display when Service Test mode is entered:

PRTCT WNG: The unit was shut down because of an abnormality in the AMP system. (The PROTECT line operates at the MID level.)
PRTCT ERR: The unit was shut down because of a failure in the AMP system. (The PROTECT line operates at the LO level.)
DVD PRTECT: The unit was shut down because of a failure in the DVD system. (The VDET line operates at the HI or LO level.)

■ Conditions for the protect circuit operations

	Voltage		Conditions	FL display in Service Test mode
PROTECT	HI level	>3.55V	Normal	
	MID level	1.8V - 3.5V	The unit is shut down because of an abnormality.	PRTCT WNG
	LO level	<1.8V	The unit is shut down because of a failure.	PRTCT ERR
VDET	HI level	>4.25V	The unit is shut down because of a failure.	DVD PRTECT
	MID level	3.3V	Normal	
	LO level	<2.5V	The unit is shut down because of an abnormality.	DVD PRTECT

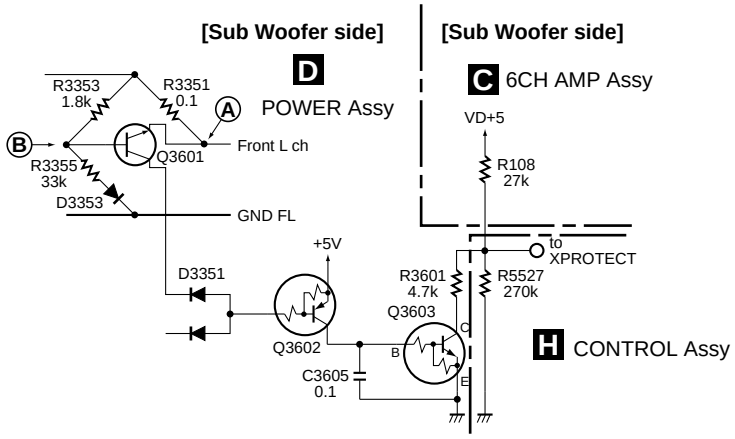
The possible failures for each error message are as follows:
PRTCT WNG:
- The Speaker terminal became overloaded because of short-circuit. (See ①.)

PRTCT ERR:
- The main power supply became LO level because of short-circuit or disconnection of connectors. (See ②.)
- Disconnection of the FAN connector or interruption of rotation of the fan (See ③.)
- DC was generated at the output because of a failure in the AMP system, etc. (See ④.)
- Abnormal temperature was detected by the thermistor. (See ⑤.)

DVD PRTECT:
- An error was generated in the main power supply inside the DVDM. (See ⑥.)

■ Protection circuit that activates against a PRTCT WNG error

① When the Speaker terminal becomes overloaded



In Normal mode, the speaker (6 ohms) is connected between the FL and GND FL points. Because the voltage at Point Ⓐ is higher than that at Point Ⓑ, Q3601 does not operate.

If the resistance between the FL and GND FL points becomes 1.83 ohms or less, Q3601 begins to operate, Q3602 is turned on, Q3603 (E, C, and B)is turned on, and the level of XPROTECT becomes MID.

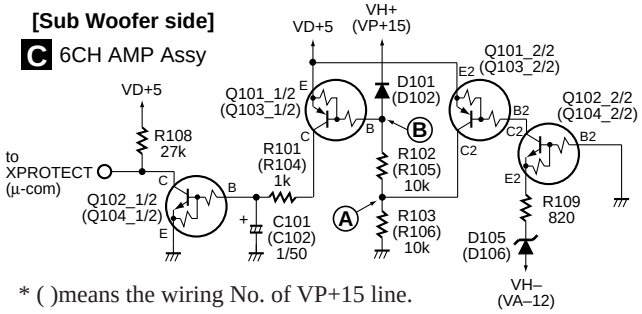
→ The microcomputer detects the XPROTECT level and shuts the power to the unit off.

■ Protection circuit that activates against a PRTCT ERR error

② When the main power supply becomes LO level because of short-circuit or disconnection of connectors

② -1 Short-circuit-detection circuit for the amplifier power circuit (VH+[VP+15], VD+5, -12 V [VA-12])

Circuit for shutting the power off when VP+15, VD+5, or VA-12 is short-circuited to ground (GND)



* ( )means the wiring No. of VP+15 line.

- In Normal mode, as Q101 (Q103) (E2, B2, C2) and Q102 (Q104) (E2, B2, C2) are on, the voltage at Point Ⓐ is about 5 V. The voltage at Point Ⓑ is therefore about the same. As Q101 (Q103) (E, C, B) is off, Q102 (Q104) (E, C, B) is also off.

(1) When VH+(VP+15) is short-circuited

As the voltage at Point Ⓑ becomes almost ground potential, and Q101 (Q103) (E, C, B) then Q102 (Q104) (E, C, B) are turned on, the level of XPROTECT becomes low.

→ The microcomputer detects the XPROTECT level and shuts the power to the unit off.

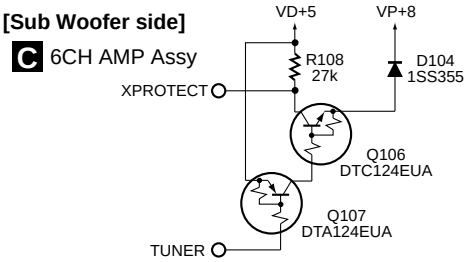
(2) When VH-(VA-12) is short-circuited

As the electric potential of VE at Q102 (Q104) (E2, C2, B2) becomes the same as that at VB, Q102 (Q104) (E2, C2, B2) is turned off. Following this, Q101 (Q103) (E2, B2, C2) is turned off, which changes the voltage at Points Ⓐ and Ⓑ to a value other than 5 V. Therefore, Q101 (Q103) (E, C, B) then Q102 (Q104) (E, C, B) are turned on, the level of XPROTECT becomes low.

(3) When VD+5 is short-circuited

The level of the XPROTECT line becomes low. The microcomputer detects the XPROTECT level and shuts the power to the unit off.

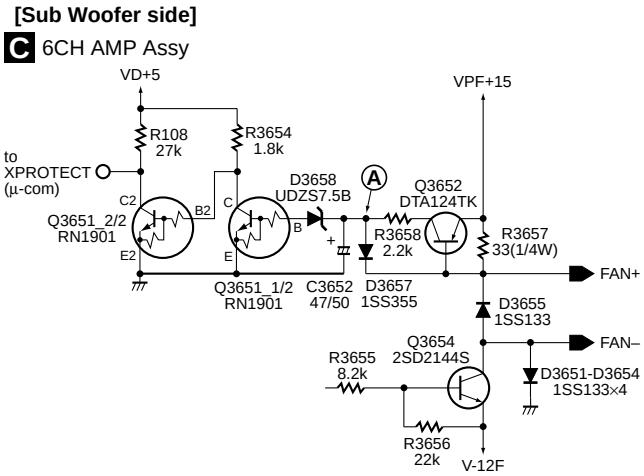
② -2 Short-circuit-detection circuit for the DVD power supply (VP+8)



As the TUNER line is fixed to GND level, Q107 is always on. If the level at VP+8 falls to GND level because of short-circuit, etc., Q106 is turned on, and the level of the XPROTECT line becomes low.

← The microcomputer detects the XPROTECT level and shuts the power to the unit off.

③ When the FAN connector is disconnected or when rotation of the fan is interrupted

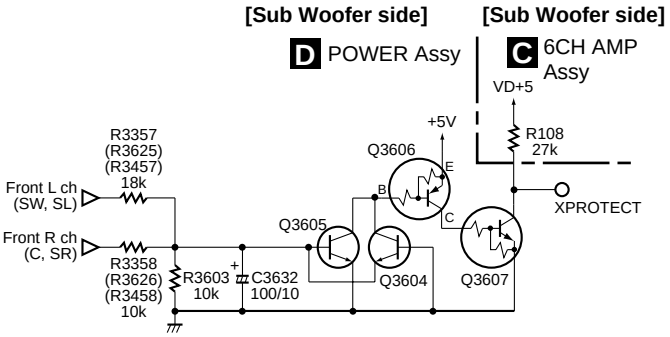


If no fan is connected between FAN+ and FAN-, or when the fan cannot rotate because of a foreign object caught in the blades, the BASE of Q3652 becomes OPEN, and Q3652 and Q3651-1/2 (E, C, B) are turned off. Then Q3651-2/2 (E2, B2, C2) is turned on, and the level of XPROTECT becomes low.

→ The microcomputer detects the XPROTECT level and shuts the power to the unit off.

When FAN+ and FAN- are short-circuited, the electric potential at Point Ⓐ becomes higher than GND level by the addition of the values at D3656 and D3657. As this value is lower than that at D3658, Q3651 (E, C, B) is turned off, Q3651 (E2, B2, C2) is turned on, and the level of XPROTECT becomes low.

④ When DC is generated at the output because of a failure in the AMP system, etc.



• In Normal mode, both Q3605 and Q3604 are off.

(1) When positive (+) DC voltage is generated at the SP terminal

When positive (+) DC voltage is generated at the L or R channel, and VB of Q3605 becomes higher than that at the operation point, Q3606 (E, C, B) is turned on, and the level of XPROTECT becomes low.

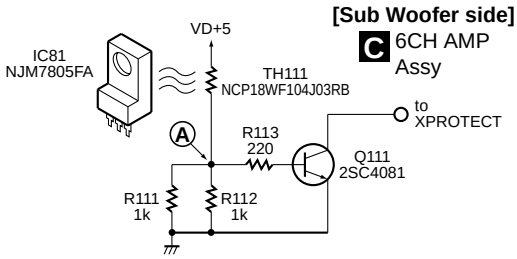
→ The microcomputer detects the XPROTECT level and shuts the power to the unit off.

(2) When negative (-) DC voltage was generated at the SP terminal

Q3604 is turned on, and XPROTECT is activated.

⑤ When abnormally high temperature is detected by the thermistor

⑤ -1 IC81 abnormal temperature detection circuit

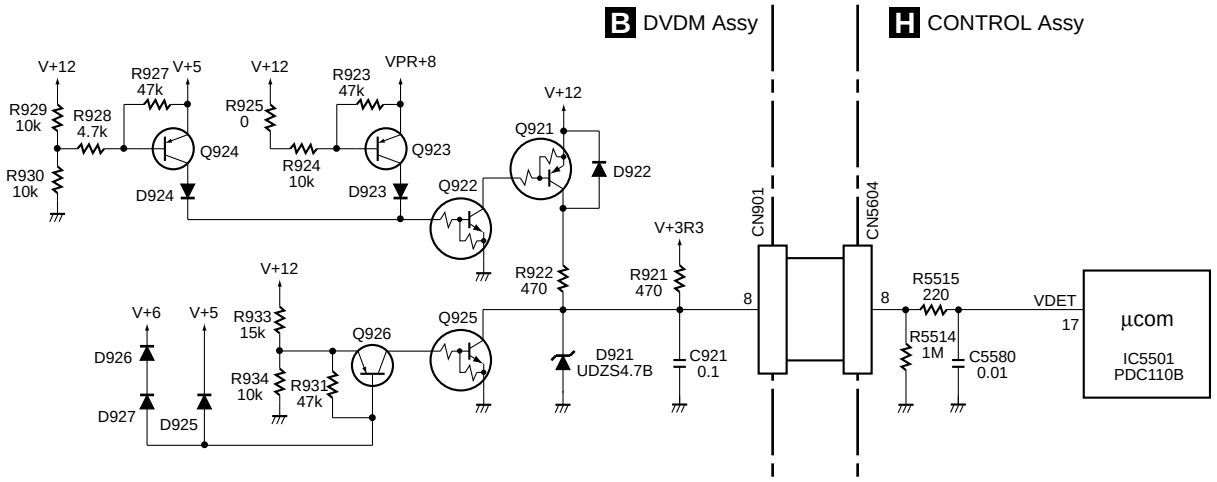


The voltage at Point Ⓐ becomes the divided voltage of TH111 and R111//R112 (combined resistance of parallel-connected resistors R111 and R112.) In Normal mode, the resistance at TH111 is much higher than R111//R112, and Q111 is off. (Note that the resistance at TH111 becomes lower as the temperature increases.) If the solder temperature at IC81 increases abnormally, the temperature at TH111 (thermistor) mounted closest to the land of IC81 increases accordingly, and the resistance at TH111 decreases.

When the temperature at TH111 reaches 90-110_C (varying according to conditions,) the voltage at Point (A) becomes high enough to turn Q111 on, and the level of the XPROTECT line becomes low. The microcomputer detects the XPROTECT level and shuts the power to the unit off.

■ Protection circuit that activates against a DVD PRTECT error

⑥ The DVDM monitors the voltage of the main power supply by VDET signals.
In Normal mode, the VDET signal is at the MID level (3.3 V). In the following conditions, the VDET signal level becomes L or H, and the microcomputer is notified of this abnormality.



Items to be detected by VDET

(1) When the power voltages inside the DVDM become abnormal, as shown in the table below

Status	Power	Voltage	Operation								VDET voltage
			Q923	Q924	Q922	Q921	D921	D922	Q926	Q925	
In Normal mode			off	off	off	off	off	off	off	off	Mid
When an abnormality is generat	VDVD+12	<1V	(on)	(on)	(on)	(off)	off	on	off	off	L
		>15.5V	off	off	off	off	off	off	on	on	L
	VPR+8	<5.2V	–	off	off	off	off	–	on	on	L
		>12.6V	on	–	on	on	on	–	off	off	H
	V+6	<3V	–	–	–	–	–	–	on	on	L
	V+5	<3.6V	–	off	off	off	off	–	on	on	L
		>6.6V	–	on	on	on	on	–	off	off	H
	V+3R3	<2.5V	–	–	–	–	–	–	–	–	L
		>4.25V	–	–	–	–	(on)	–	–	–	H

(2) When the VDET signal to the microcomputer is interrupted because of defective soldering of the 30-pin connector or incomplete insertion of FFC
→ The VDET level is lowered by the pull-down resistor (1 Mohms) on the side of the microcomputer.

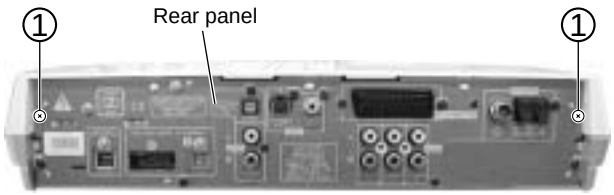
7.1.13 DISASSEMBLY

Note: For performing the diagnosis shown below, the following jig cable for service are required:
- GGD1222

This unit is a system component, so it does not operate independently.
Refer to section "7.1.11 SINGLE OPERATION METHOD" to work it independently.

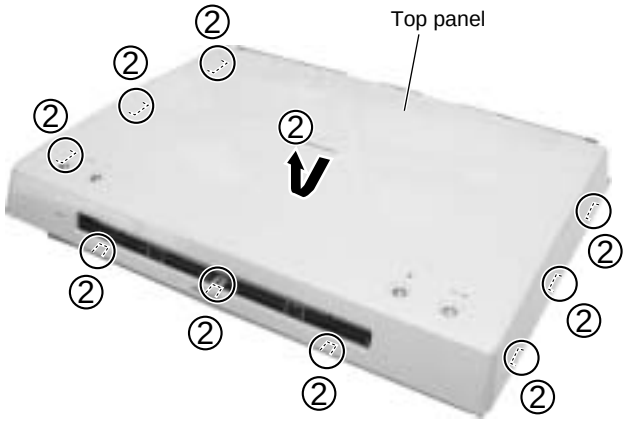
1 Top panel, Top plate

① Remove the two screws.

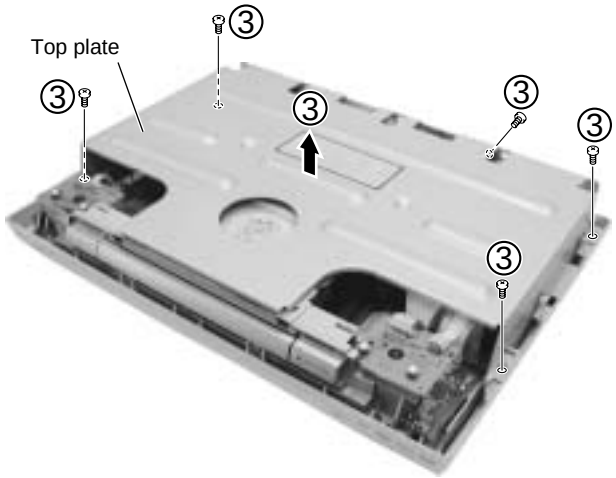


Note: This photograph shows other models.
However, the work method is the same.

② Remove the top panel by removing the nine hooks.



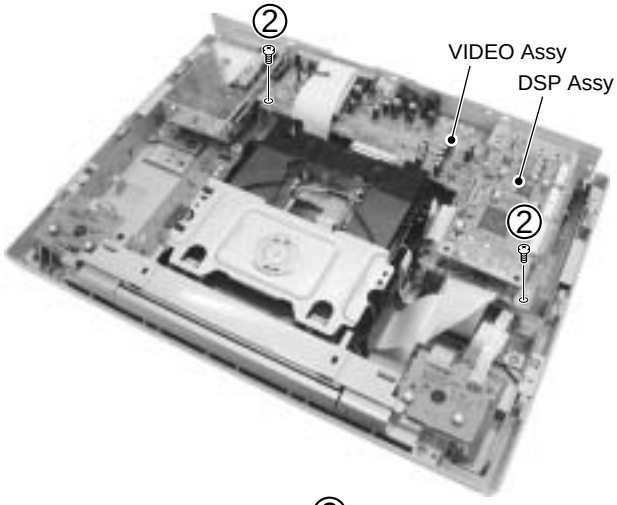
③ Remove the top plate by removing the five screws.

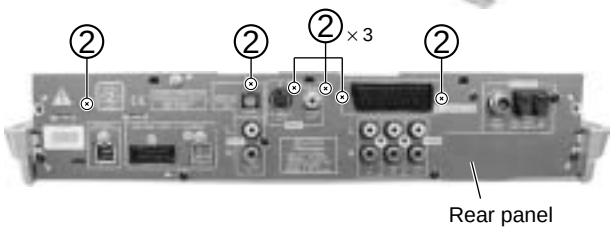


2 VIDEO Assy

① Remove the top panel and top plate. (See Step 1.)

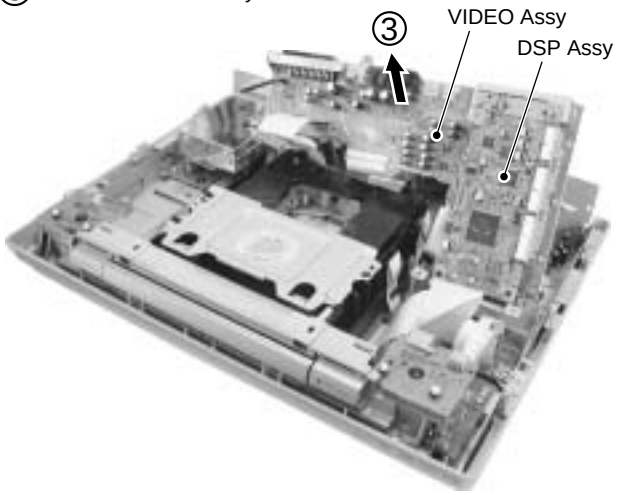
② Remove the eight screws.





Note: This photograph shows other models.
However, the work method is the same.

③ Stand the VIDEO Assy.

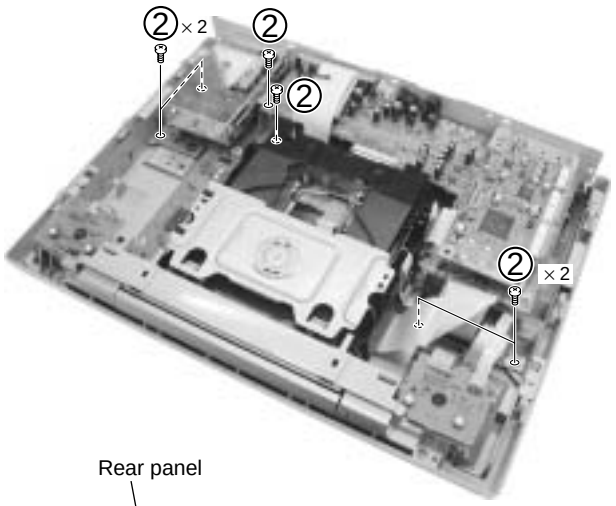


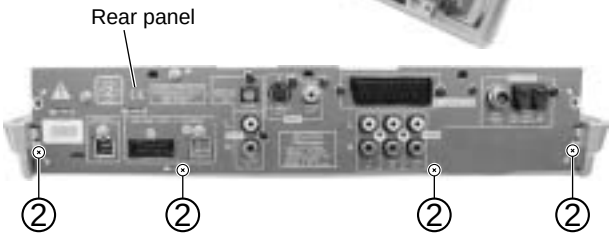
Diagnosis

3 CONTROL Assy

① Remove the top panel and top plate. (See Step 1.)

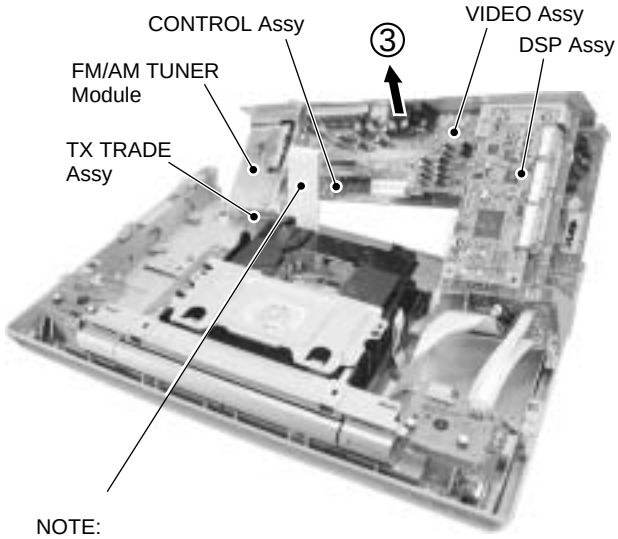
② Remove the ten screws.





Note: This photograph shows other models.
However, the work method is the same.

③ Stand the CONTROL Assy.



NOTE:
When this FFC cable is off from the connector and the power is turned on, the parts below on the DVDM ASSY may be destroyed. Be sure to take care when servicing.

IC851	DSD1791DBR
IC861, IC871	DSD1702EG

Diagnosis

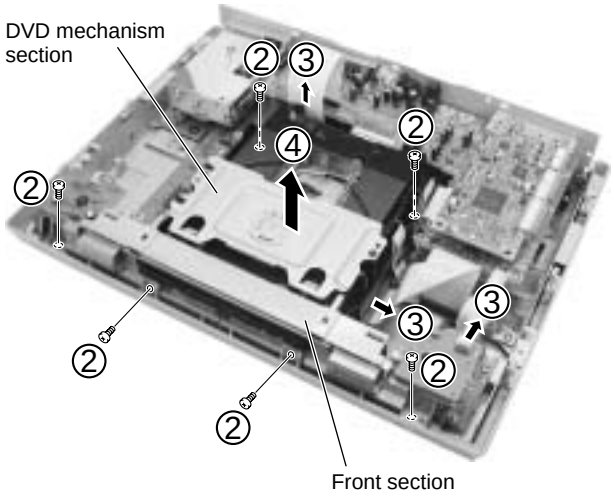
4 DVDM Assy

① Remove the top panel and top plate. (See Step 1.)

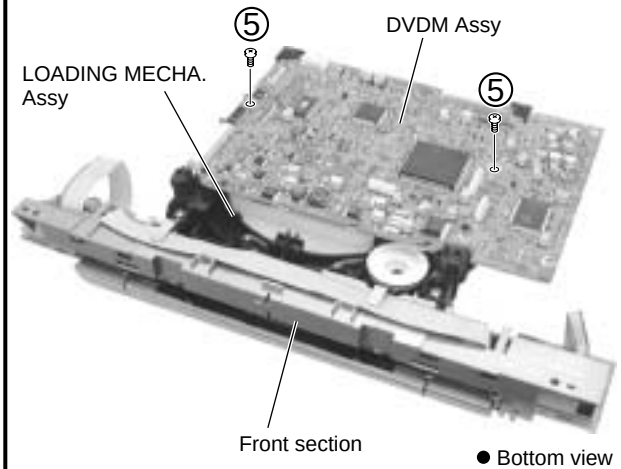
② Remove the six screws.

③ Remove the three flexible cables.

④ Remove the DVD mechanism section with front section.

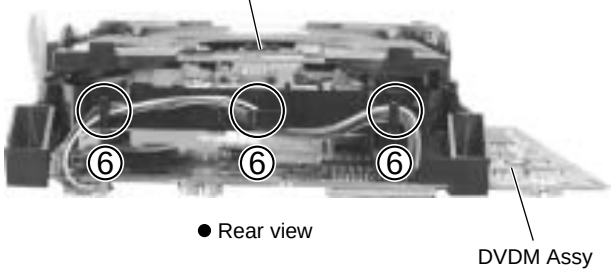


⑤ Remove the two screws.



● Bottom view

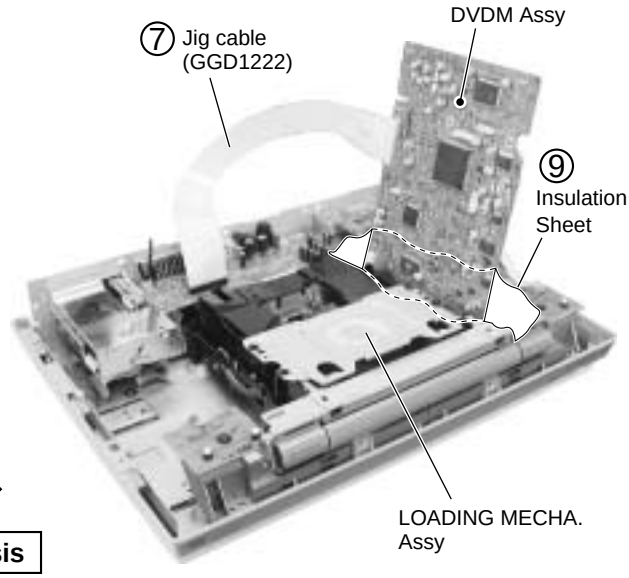
⑥ Release the jumper wire.



⑦ Connect the jig cable.

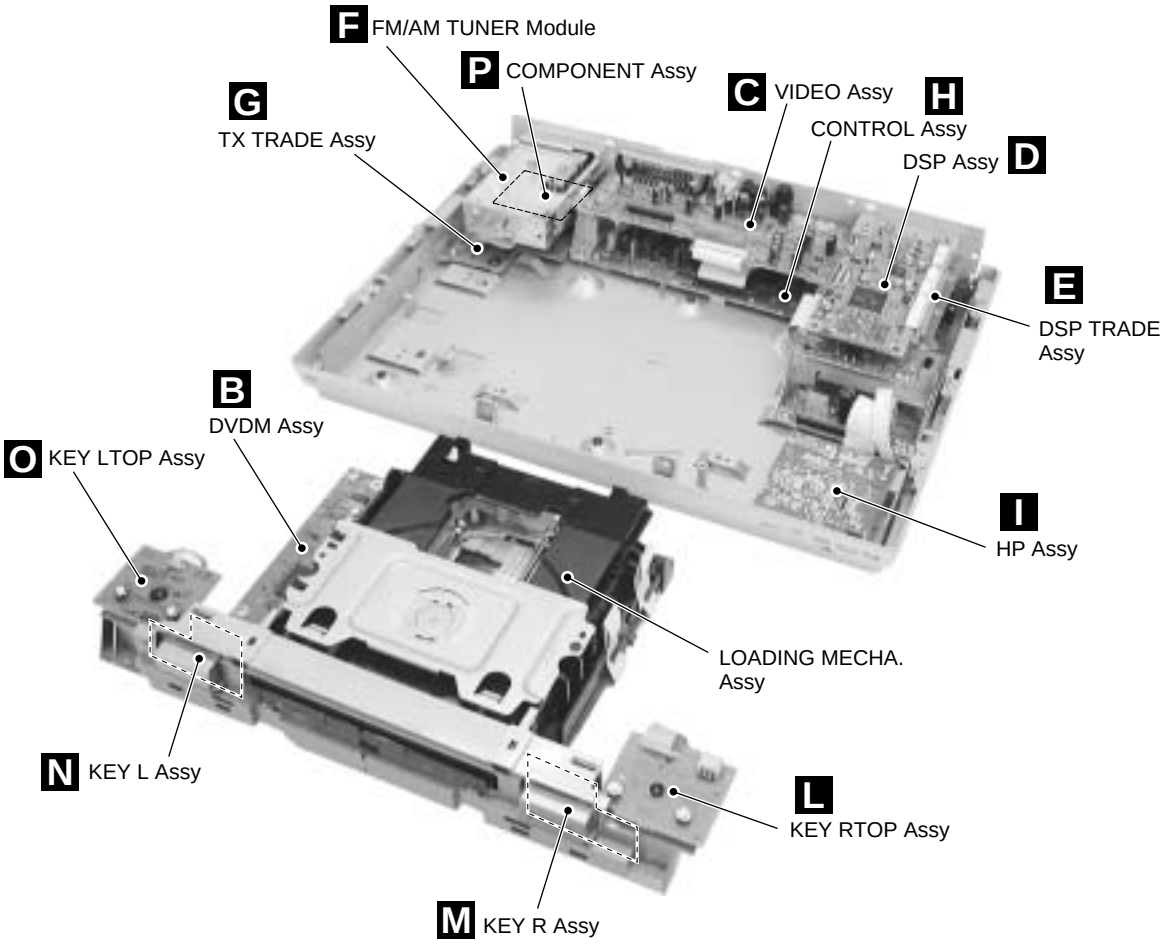
⑧ Arrange the DVDM Assy as shown in the photo below.

⑨ Insert the insulation sheet.



Diagnosis

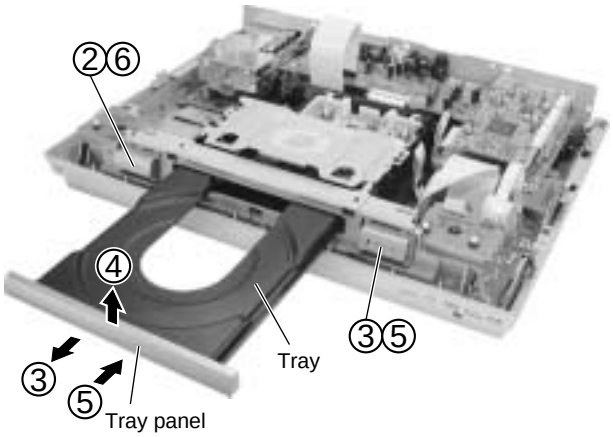
PCB Location



5 Tray panel

Firstly remove the tray panel to remove the mecha. section.
In this section, explain a disassembly of the tray panel.

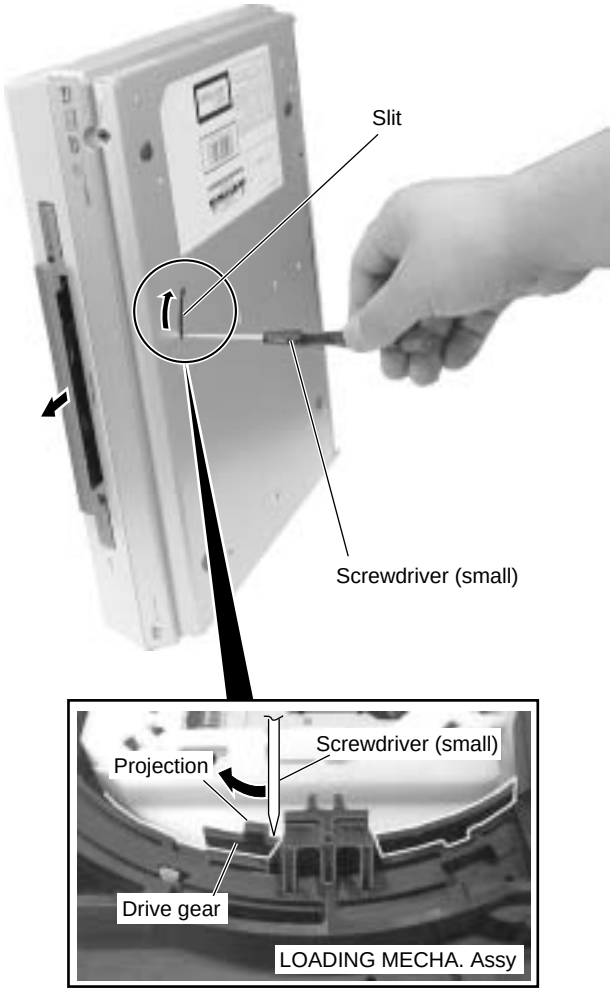
① Remove the top panel and top plate. (See Step 1.)
② Press the ⏻ STANDBY/ON button to turn on the power.
③ Press the ⏏ (OPEN/CLOSE) button to open the tray.
④ Remove the tray panel.
⑤ Press the ⏏ (OPEN/CLOSE) button to close the tray.
⑥ Press the ⏻ STANDBY/ON button to turn off the power.



⑦ Disassembly of after step 7, refer to "Step 4 DVDM Assy" .

● How to open the tray when the power cannot be on

Insert a screwdriver (small) into the slit located at the bottom of the unit, and slide the projection of the drive gear in the LOADING MECHA. Assy in the direction of the arrow, as indicated in the photo. If the tray pops out a little, fully pull it out by a hand.



Removing the TRAVERSE MECHA. Assy-S and Pickup Assy-S

1 LOADING MECHA. Assy

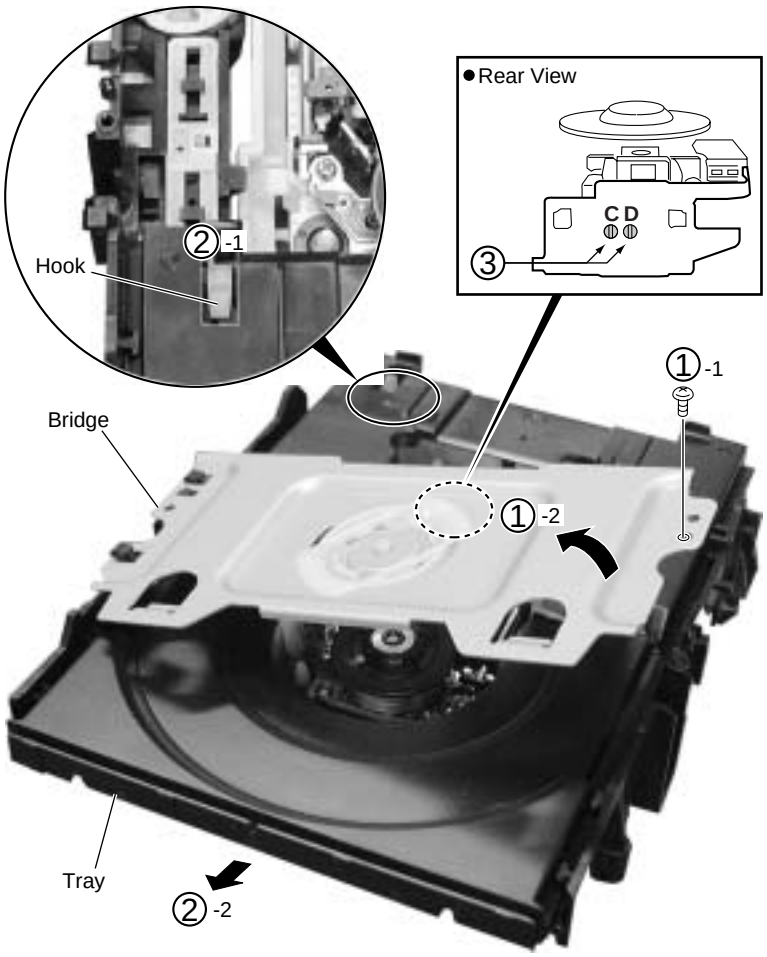
① Remove the bridge by removing the one screw.

② Pull out the tray, then remove it by pressing the hook.

③ Short-circuit two points of C and D by soldering.

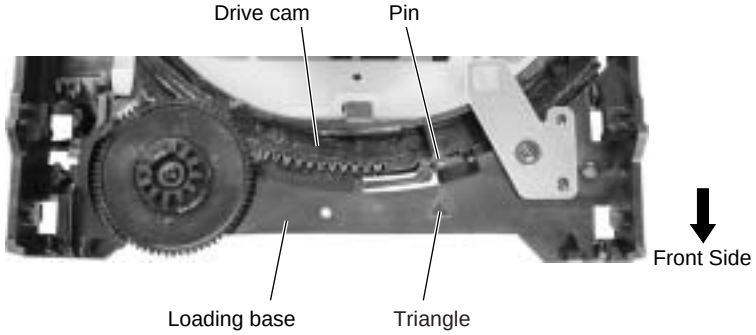
Note: After replacement, connect the flexible cable, then remove the soldered joint (open).

④ Remove the four connectors from the LOADING MECHA. Assy.



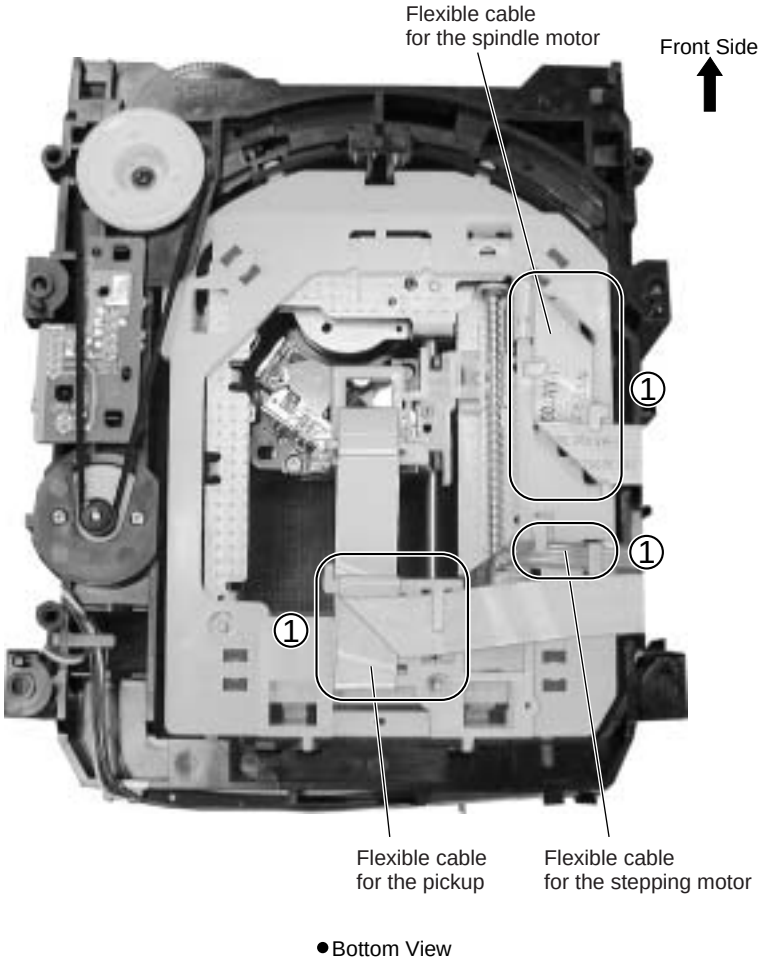
Note when reinserting the Tray

When reinserting the Tray, first align the triangle printed on the Loading base and the pin of the Drive cam, then insert the Tray.



2 TRAVERSE MECHA. Assy-S

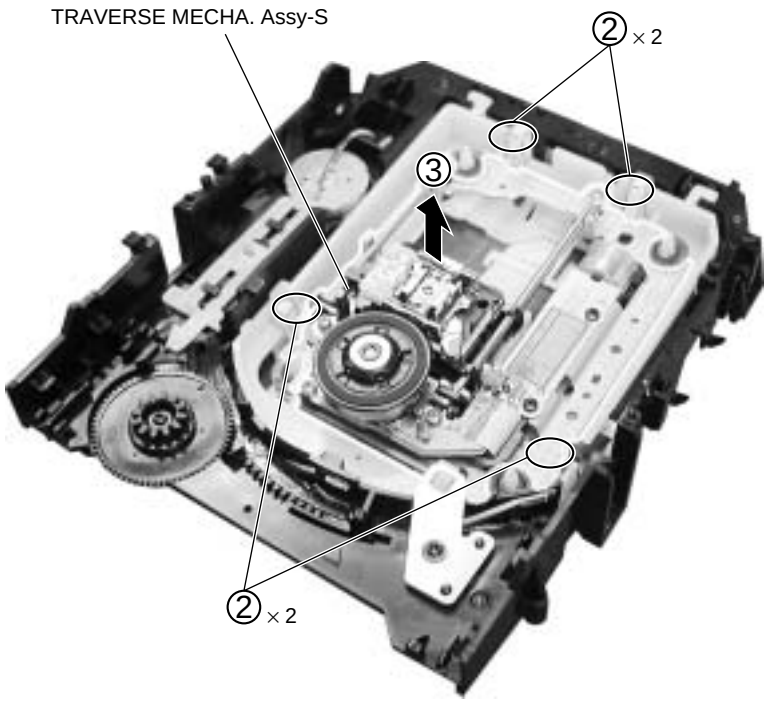
① Dislodge the flexible cables from their packaged placement.



● Bottom View

② Remove the four hooks.

③ Remove the TRAVERSE MECHA. Assy-S.

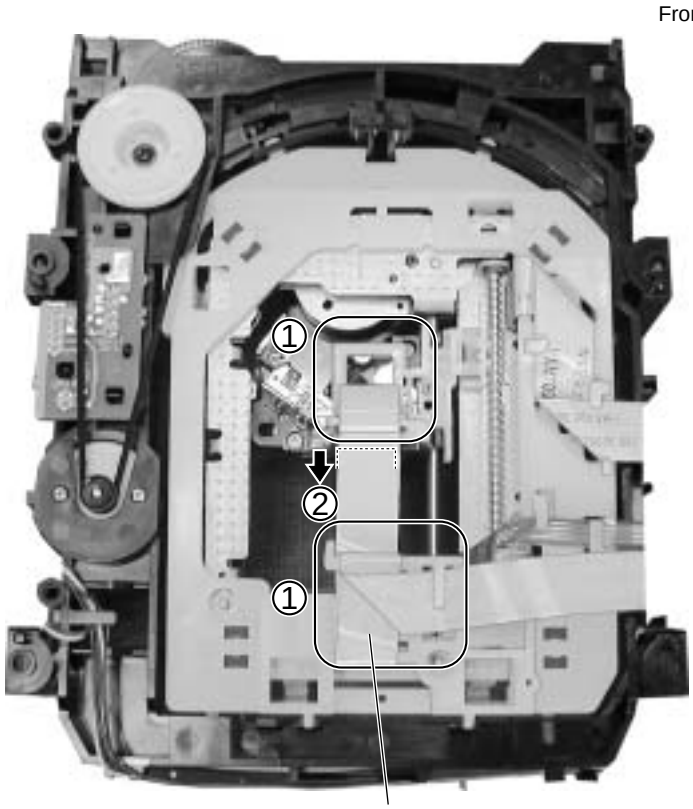


3 Pickup Assy-S

Note: The Pickup Assy-S can be removed without removing the TRAVERSE MECHA. Assy-S. (shown as Step 2.)

① Dislodge the flexible cable for the pickup from its packaged placement.

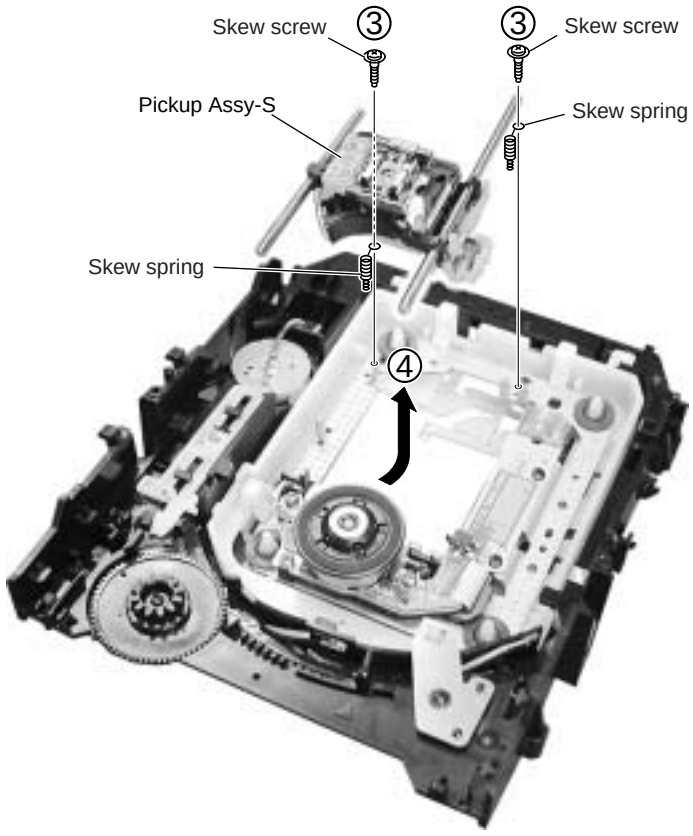
② Remove the flexible cable for the pickup.



● Bottom View

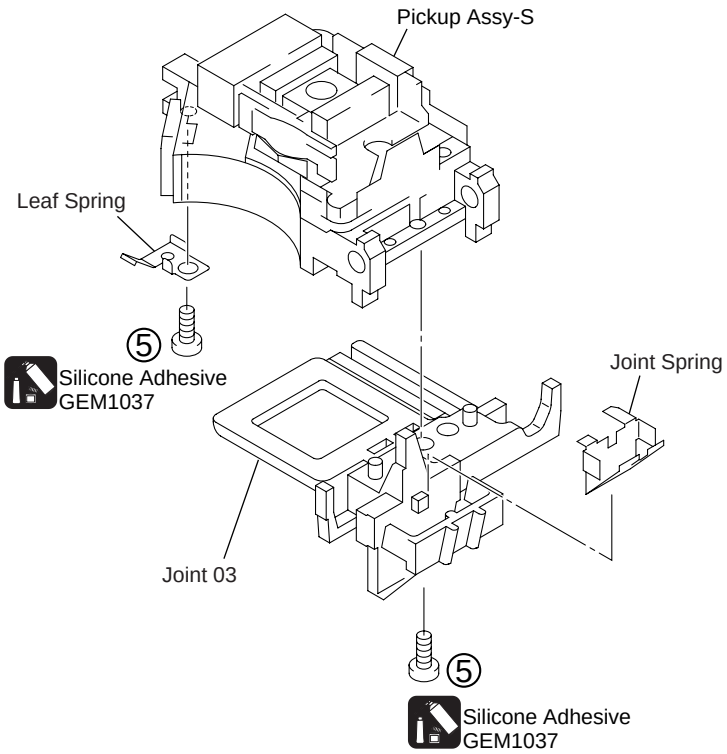
③ Remove the two skew screws and two skew springs.

④ Remove the Pickup Assy-S.



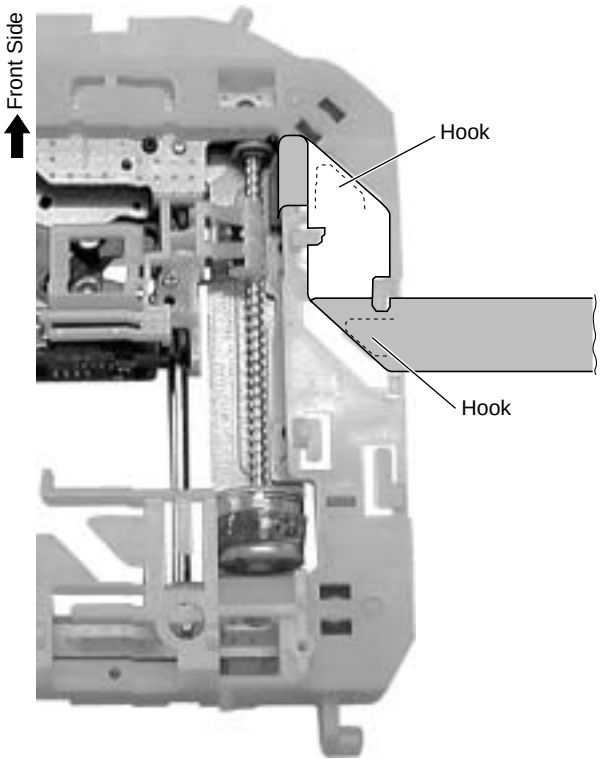
⑤ Remove the two screws.

Note: The screws are secured with epoxy. Make sure to apply epoxy after reattaching the screws.



Arrangement of the flexible cable for the spindle motor

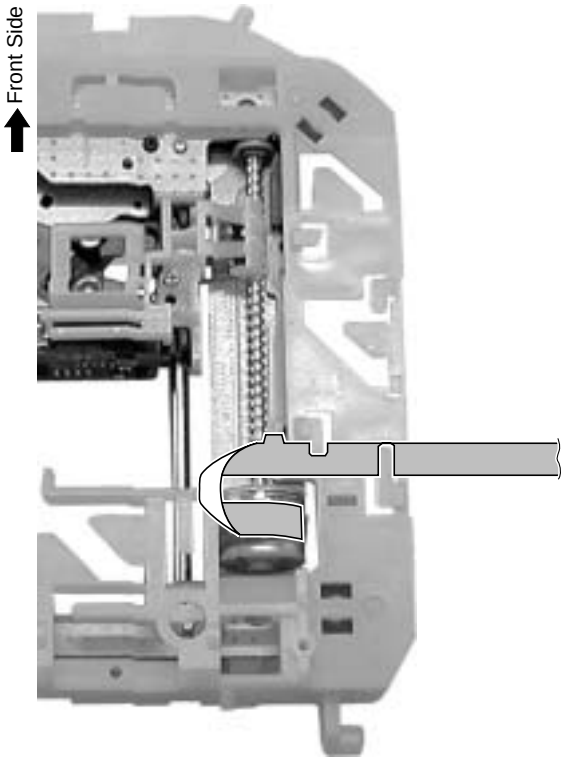
: Conductive surface



● Bottom View

Arrangement of the flexible cable for the stepping motor

: Conductive surface



● Bottom View

Arrangement of the flexible cable for the pickup

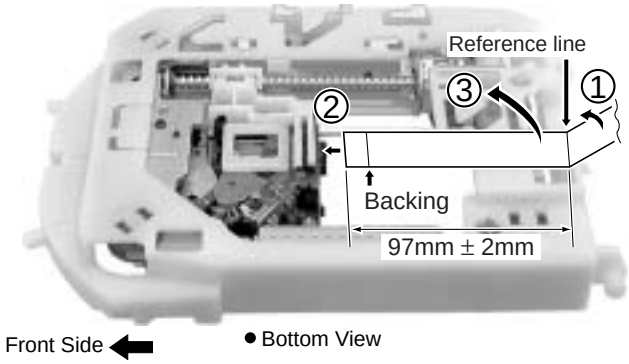
: Conductive surface

Note:
Be sure to move the Pickup Assy-S to the innermost perimeter.

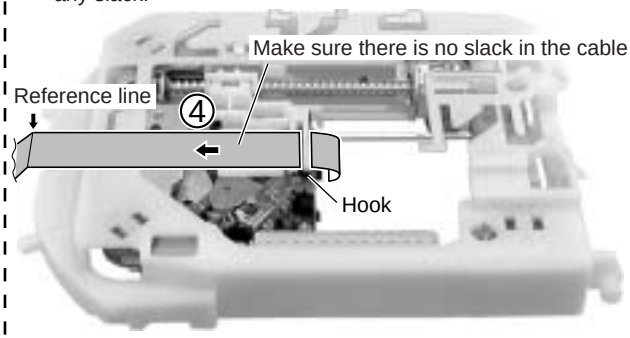
① Fold the flexible cable inward at the position of the reference line.

② Attach the flexible cable of the pickup to the connector.

③ Fold the flexible cable of the pickup with the backing inward.

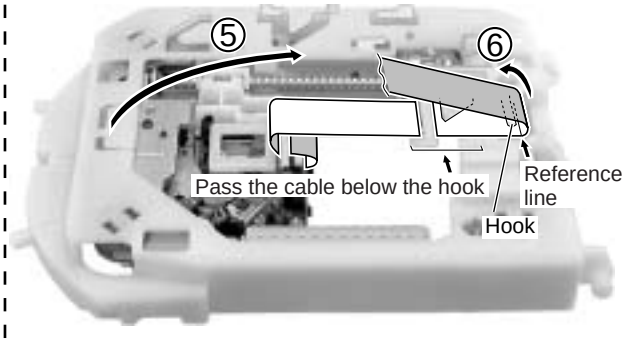


④ Pass the flexible cable through the hook not allowing any slack.

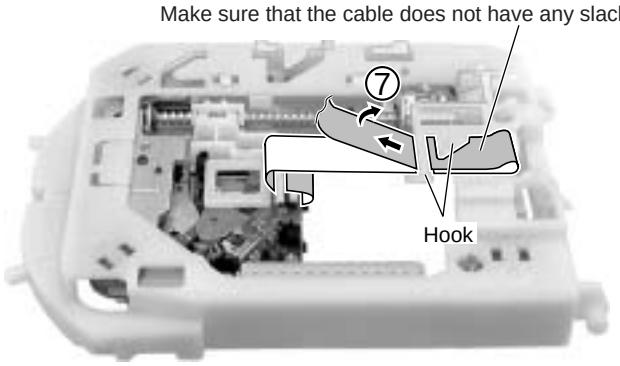


⑤ Fold the flexible cable as indicated in the photo.

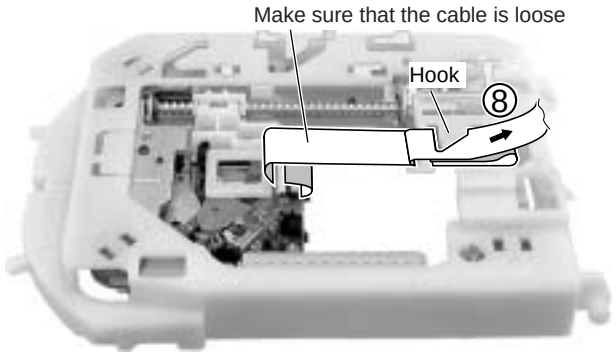
⑥ Hook the part folded in Step ① to the hook.



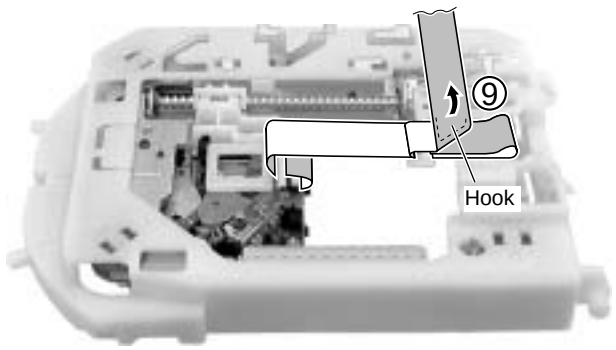
⑦ Pass the flexible cable below the hook, and fold it back.



⑧ Fold the flexible cable back at the hook.



⑨ Fold the flexible cable along the hook.



7.2 IC

• The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

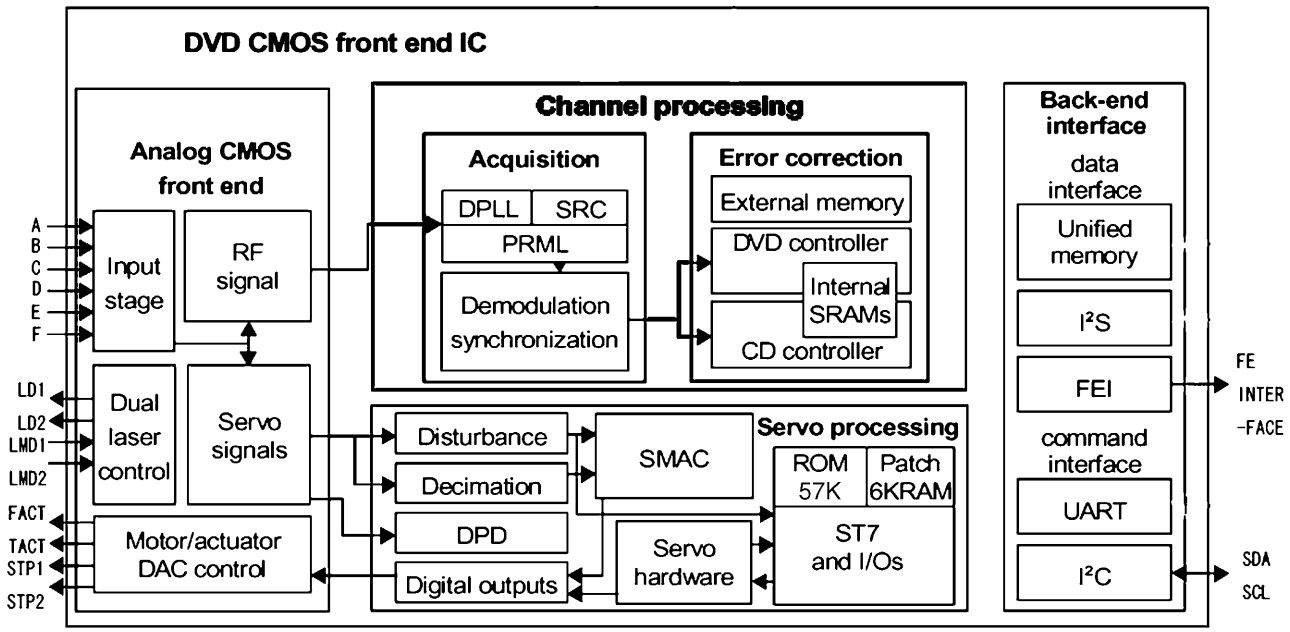
• List of IC

STM6316ATXXZ, STM5588CVB, M63108FP, SAA7893HL/C2, PDC110B

■ STM6316ATXXZ (DVDM ASSY : IC301)

• FRONT END IC

● Block Diagram



● Pin Function

No.	PIN name	description	detail
1	IREF	12.7kF	Analog block reference part
2	GNDAI	GNDA	analog gnd
3	RFIN	capacitor	RF signal C association input to a demodulation block
4	RFOUT	capacitor	B1+B2+B3+B4 mixture listing from an analog block
5	VCCA18	1V8A	analog 1V8
6	A	B1	PU - B1 input
7	GNDMN	GNDA	analog gnd
8	B	B2	PU - B2 input
9	VCC33MN	3V3A	analog 3V3
10	REFD	to pick up	2V1 output for PU
11	VCC18MN	1V8A	analog 1V8
12	D	B4	PU - B4 input
13	VCCA18IS	1V8A	analog 1V8
14	C	B3	PU - B3 input
15	VCCA33IS	3V3A	analog 3V3
16	GNDAIS	GNDA	analog gnd
17	VCC33SD	3V3A	analog 3V3
18	VCC18SD	1V8A	analog 1V8
19	GNDSD	GNDA	analog gnd
20	F	C	PU-3 beam C input
21	E	A	PU-3 beam A input
22	VSHIELDIS	GNDA	analog gnd
23	VCC18ADC	1V8A	analog 1V8
24	GNDADC	GNDA	analog gnd
25	VSHIELDADC	GNDA	analog gnd
26	VCC33DAC	3V3A	analog 3V3
27	GNDDAC	GNDA	analog gnd
28	SPINDLE	560ohm(st2)	DAC current listing for stepper drive
29	SLEDGE	560ohm(st1)	DAC current listing for stepper drive
30	REFEXT	20K1%	Reference for DAC
31	REFGND	refext	analog gnd
32	REFDAC	560ohm1%	DAC reference
33	FACT	560ohm1%	DAC current listing for focus
34	TACT	560ohm1%	DAC current listing for tracking
35	VCC18DAC	1V8A	analog 1V8
36	PC0	FG	FG pulse input
37	PC1	PS	Driver control signal
38	PC2	tray SW1(open)	SW input for tray OPEN position
39	PC3	SB	Driver control signal
40	PC4	SLD position	Inside SW input

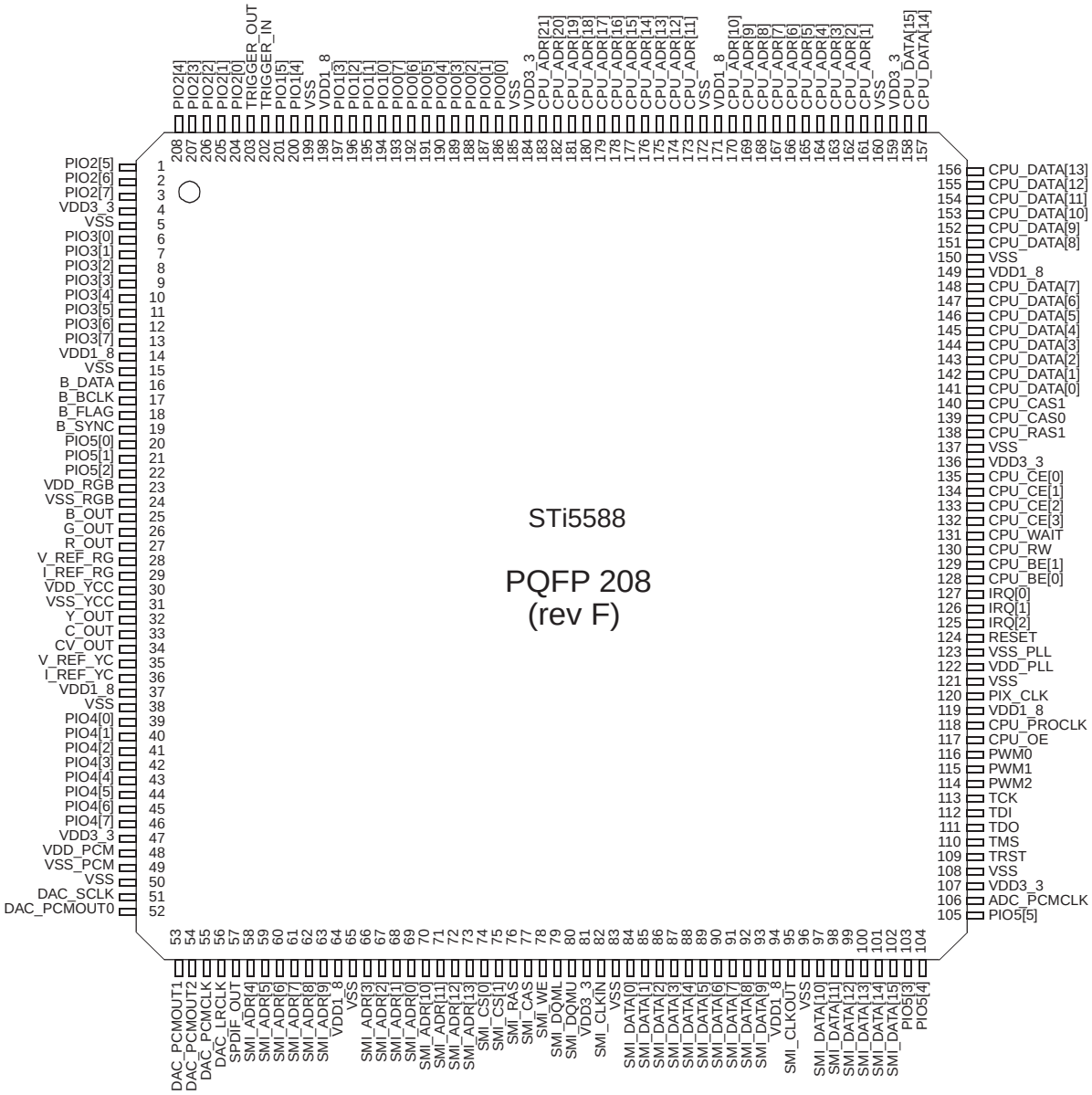
No.	PIN name	description	detail
41	VSS	GNDD	digital gnd
42	VDD33	3V3D	digital 3V3
43	PC5	780/X650	780nm/650nmLD change control signal
44	PC6	spinde PDM	Control PDM listing for spindle drive
45	PC7	opicgain	OEIC gain control signal
46	PD7	03PU/X02PU	Pull-up settlement
47	VSS	GNDD	digital gnd
48	VDD18	1V8D	digital 1V8
49	PD6	(debug)	test
50	PD5	(debug)	test
51	PD4	(DSPclk)	test
52	PD3	(DSPdata)	test
53	PD2	(DSPstrb1)	test
54	PD1	error monitor	Terminal for TRKG error monitor (30KHzLPF add need)
55	PD0	tray PDM drive	Control PDM signal for tray drive
56	VSS	GNDD	digital gnd
57	VDD33	3V3D	digital 3V3
58	OUT_ERR	RS_ERROR	BE DATA I/F
59	OUT_EVALID	RS_ERR_EN	BE DATA I/F
60	VSS	GNDD	digital gnd
61	OUT_CLK	RS_BCLK	BE DATA I/F
62	VDD18	1V8D	digital 1V8
63	OUT_DVALID	RS_DVALID	BE DATA I/F
64	OUT_DATA	RS_DATA	BE DATA I/F
65	OUT_SYNC	RS_ECCBST	BE DATA I/F
66	PE5	SCL(DMA)	FE routine download input
67	PE4	SDA(DMA)	FE routine download input
68	PE3	SCL	BE command I/F
69	PE2	SDA	BE command I/F
70	PE1	tray SW2(close)	SW input for tray CLOSE position
71	PE0	DXXINT	FE status propagation signal
72	VSS	GNDD	digital gnd
73	VDD33	3V3D	digital 3V3
74	PF1	10K-pullup	Built-in facility setting terminal
75	PF0	10K-pulldown	Built-in facility setting terminal
76	VSS	GNDD	digital gnd
77	VDD18	1V8D	digital 1V8
78	PG1	to EMULATOR	Built-in facility setting terminal
79	PG0	to EMULATOR	Built-in facility setting terminal
80	TEST	10K-pulldown	test

No.	PIN name	description	detail
81	RESET_N	RESET	RESET input
82	VSSADC	GNDA	analog gnd
83	VDD18ADC	1V8A	analog 1V8
84	GNDPLL	GNDA	analog gnd
85	PLLOFF	GNDA	analog gnd
86	FREOUT	20MXtal	SYSTEMCLK oscillating circuit
87	FREIN	20MXtal	SYSTEMCLK oscillating circuit
88	VCC18PLL	1V8A	analog 1V8
89	LD1	650nmLD	650nmLD driving signal
90	LD2	780nmLD	780nmLD driving signal
91	VCCA33	3V3A	digital 3V3
92	TWSEL	CD_VR/GND	Monitor diodes VR junction terminal for CD
93	LMD1	LMD/LMD1	Monitor voltage junction terminal
94	LMD2	DVD_VR/LMD2	Monitor diodes VR junction terminal for DVD
95	GNDL	GNDA	analog gnd
96	TST_PM	nc	tset
97	TST_SLICE	nc	test
98	TST_ADC	nc	test
99	RFSACD	SACD_IC	RF signal output
100	VBGFILT	capacitor	Condenser junction terminal for inside reference stability

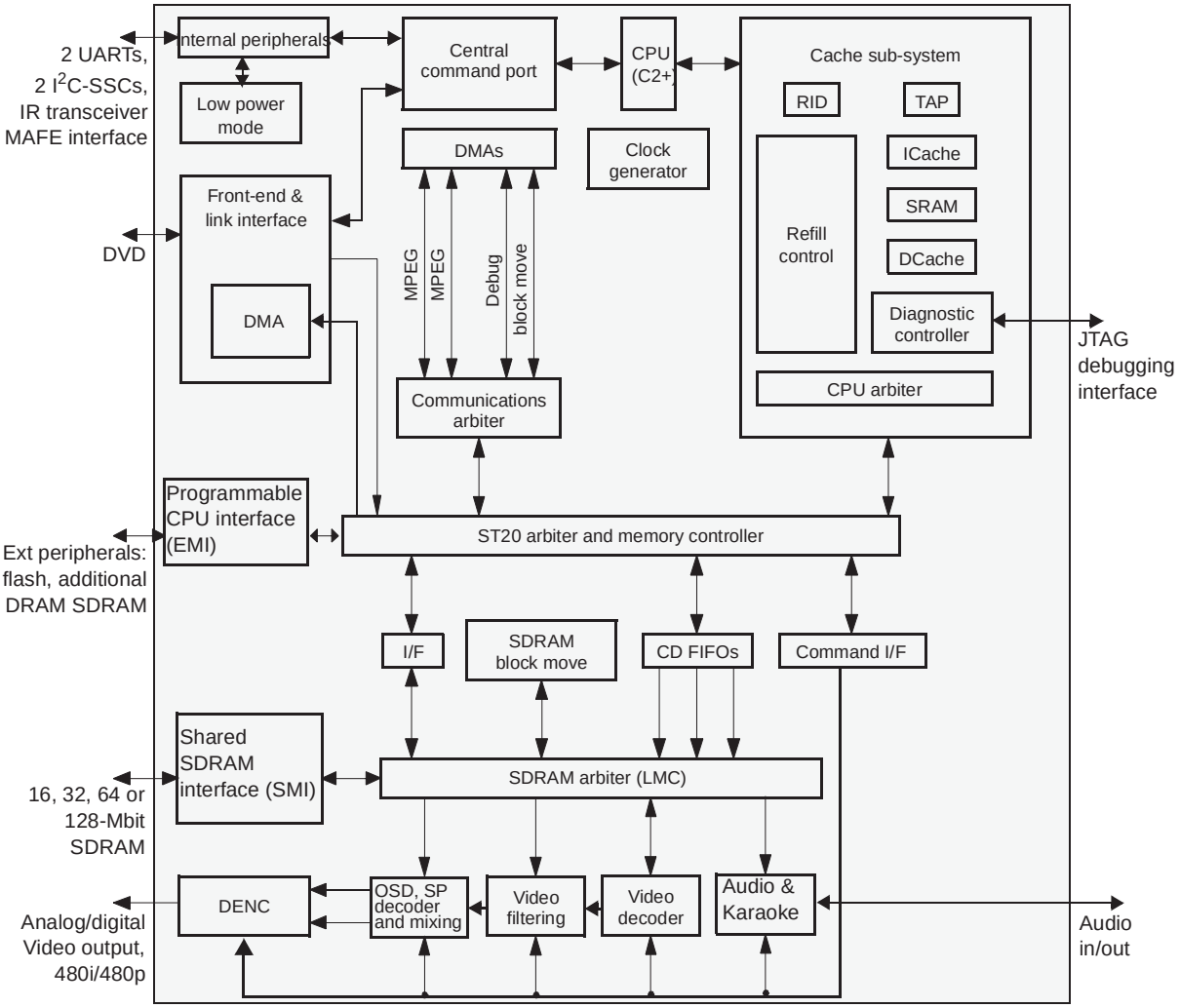
■ STI5588CVB (DVDM ASSY : IC601)

• BACK END IC

● Pin Configuration



● Block Diagram



● Pin Function

No.	Pin Name	Dir.	Pin Function
1	FP_SO	OUT	Front Panel / DAC interface. Serial transfer data output.
2	A_DATA3	OUT	Data output to SACD decoder
3	VCLK	OUT	reserved
4	VDD_3V3	-	3.3 V Power supply
5	VSS	-	Ground
6	B_DATA	OUT	SACD data output to SACD decoder
7	B_BCLK	OUT	SACD bit clock output to SACD decoder
8	B_FLAG	OUT	SACD flag output to SACD decoder
9	TRYPOS	OUT	It is not connected except 5 Disc Changer.
		IN	Only 5 Disc Changer. Tray rotation pulse input. CAPTURE_IN0 can be used.
10	SQUEEZE	OUT	Output signal for S-Video output S1/S2 control. 'H' : squeeze output mode.
11	RTS	OUT	UART(RS-232C) Request To Send signal output.
12	LETTER	OUT	Output signal for S-Video output S1/S2 control & EURO(SCART) connector (FUNCTION SWITCHING) signal. 'H' : letter-box output mode.
13	CTS	IN	UART(RS-232C) Clear To Send signal input.
14	VDD_1V8	-	1.8 V Power supply
15	VSS	-	Ground
16	FE_DATA	IN	Front-End L6316 stream interface. Serial data input.
17	FE_BCLK	IN	Front-End L6316 stream interface. Serial clock input.
18	FE_DVALID	IN	Front-End L6316 stream interface. Data valid flag input.
19	FE_SYNC	IN	Front-End L6316 stream interface. Serial synchronize flag input.
20	FE_EVALID	IN	Front-End L6316 stream interface. Error valid flag for RS_split.
21	FE_ECCBST	IN	Front-End L6316 stream interface. ECC block start flag for RS_split.
22	I/XP	OUT	Output signal for a change of interlace/Progressive output for video driver. 'L' : progressive 'H' : interlace
23	VDD_RGB	-	RGB circuit 3.3 V Power supply
24	VSS_RGB	-	RGB circuit Ground
25	B_OUT	OUT	B / Cb
26	G_OUT	OUT	G / Y
27	R_OUT	OUT	R / Cr
28	VREF_RGB	IN	RGB DAC reference
29	IREF_RGB	IN	RGB DAC current reference
30	VDD_YCC	-	YC circuit 3.3 V Power supply
31	VSS_YCC	-	YC circuit Ground
32	Y_OUT	OUT	Y
33	C_OUT	OUT	C
34	CV_OUT	OUT	CV
35	VREF_YCC	IN	YCC DAC reference
36	IREF_YCC	IN	YCC DAC current reference
37	VDD_1V8	-	1.8 V Power supply
38	VSS	-	Ground

No.	Pin Name	Dir.	Pin Function
39	FE_XDRV_MUTE	OUT	It is not connected except 5 Disc Changer.
			Only 5 Disc Changer. Output signal for motor driver muting. 'L' : muting
40	FE_OPEN	OUT	It is not connected except 5 Disc Changer.
		IN	Only 5 Disc Changer. Input signal for tray position. 'H' : complete OPEN position.
41	FE_CLOSE	OUT	It is not connected except 5 Disc Changer.
		IN	Only 5 Disc Changer. Input signal for tray position. 'H' : complete CLOSE position.
42	CLAMP	OUT	It is not connected except 5 Disc Changer.
		IN	Only 5 Disc Changer. Input signal for showing disc clamp position. 'H' : complete disc clamp position.
43	XUNCLAMP	OUT	It is not connected except 5 Disc Changer.
		IN	Only 5 Disc Changer. Input signal for showing disc un-clamp position. 'H' : complete disc clamp position.
44	DISC_SNS	OUT	It is not connected except 5 Disc Changer.
		IN	Only 5 Disc Changer. Input signal for disc existing. 'L' : existing
45	XDRVMUTE2	OUT	reserved
46	TP-x	OUT	reserved
47	VDD_3V3	-	3.3 V Power supply
48	VDD_PCM	-	1.8 V Power supply
49	VSS_PCM	-	Ground
50	VSS	-	Ground
51	A_BCK	OUT	Audio DAC clock
52	A_DATA0	OUT	Audio DAC Front L,R data
53	A_DATA1	OUT	Audio DAC Center, LFE data
54	A_DATA2	OUT	Audio DAC Surround L, R data
55	A_MCLK	OUT	Audio DAC Master clock
56	A_LRCK	OUT	Audio DAC L/R clock
57	A_DOUT	OUT	S/PDIF(IEC60958) digital audio output.
58	SMI_A4	OUT	SMI SDRAM Address
59	SMI_A5		
60	SMI_A6		
61	SMI_A7		
62	SMI_A8		
63	SMI_A9		
64	VDD_1V8	-	1.8 V Power supply
65	VSS	-	Ground
66	SMI_A3	OUT	SMI SDRAM Address
67	SMI_A2		
68	SMI_A1		
69	SMI_A0		
70	SMI_A10		
71	SMI_A11		
72	SMI_A12		
73	SMI_A13		

No.	Pin Name	Dir.	Pin Function
74	SMI_CS0	OUT	SMI SDRAM chip select 'L'.
75	SMI_CS1	OUT	reserved
76	SMI_RAS	OUT	SMI SDRAM RAS 'L'
77	SMI_CAS	OUT	SMI SDRAM CAS 'L'
78	SMI_WE	OUT	SMI SDRAM Write Enable 'L'
79	SMI_DQML	OUT	SMI SDRAM Lower DQM 'L': Lower select
80	SMI_DQMU	OUT	SMI SDRAM Upper DQM 'L': Upper select
81	VDD_3V3	-	3.3 V Power supply
82	SMI_CLKIN	IN	External SDRAM clock input.
83	VSS	-	Ground
84	SMI_D0	I/O	SMI SDRAM Data
85	SMI_D1		
86	SMI_D2		
87	SMI_D3		
88	SMI_D4		
89	SMI_D5		
90	SMI_D6		
91	SMI_D7		
92	SMI_D8		
93	SMI_D9		
94	VDD_1V8	-	1.8 V Power supply
95	SMI_CLKOUT	OUT	SDRAM clock output.
96	VSS	-	Ground
97	SMI_D10	I/O	SMI SDRAM Data
98	SMI_D11		
99	SMI_D12		
100	SMI_D13		
101	SMI_D14		
102	SMI_D15		
103	TRACK_CROSS	OUT	reserved
104	DSD_XPCM	OUT	reserved
105	DAC_XRST	OUT	Reset signal of audio DAC. 'L': Reset
106	ADC_PCMCLK	OUT	reserved
107	VDD_3V3	-	3.3 V Power supply
108	VSS	-	Ground
109	XTRST	IN	Diagnostic Control Unit interface
110	TMS	IN	Diagnostic Control Unit interface
111	TDO	OUT	Diagnostic Control Unit interface
112	TDI	IN	Diagnostic Control Unit interface
113	TCK	IN	Diagnostic Control Unit interface
114	ROTDRV	OUT	Only 5 disc changer. PWM output for tray rotation.
115	BOOT_FROM_ROM	IN	Boot select 'L' : Boot from DCU. 'H' : Boot form ROM.
116	LOAD_DRV	OUT	Only 5 disc changer. PWM output for tray Open/Close drive.
117	CPU_OE	OUT	OE signal for 16M bits FLASH memory for firmware. 'L': enable

No.	Pin Name	Dir.	Pin Function
118	CPU_SDCK	OUT	CLOCK for 64M bits SDRAM for debugging firmware.
119	VDD_1V8	-	1.8 V Power supply
120	PIXCLK	IN	Master 27MHz system clock input.
121	VSS	-	Ground
122	VDD_PLL	-	Clock PLL circuit 1.8 V Power supply
123	VSS_PLL	-	Clock PLL circuit Ground
124	XRESET	IN	Power ON system RESET signal. 'L': reset
125	SACD_IRQ	IN	Interrupt signal from SACD decoder
126	FP_XRDY	IN	Front Panel interface. Hand-shake input.
127	FE_INT	IN	Interrupt input signal from Front-End L6316.
128	F_XWE, SD_DQML	OUT	Flash memory write enable. Debug SDRAM/SRAM Lower DQM. 'L': enable, Lower select.
129	SD_DQMU	OUT	Debug SDRAM/SRAM Upper DQM 'L':upper select
130	SD_RXW	OUT	Debug SDRAM Read/Write 'L':write, 'H':read
131	CPU_WAIT	IN	CPU wait 'H' input
132	CE_FLASH	OUT	Flash memory Chip Enable 'L'.
133	CE_SACD	OUT	Licence signal from SACD decoder
134	CPU_CE1	OUT	reserved
135	SD_XRAS	OUT	Debug SDRAM RAS 'L' Debug SRAM chip enable 'L'
136	VDD_3V3	-	3.3 V Power supply
137	VSS	-	Ground
138	CPU_RAS1	OUT	reserved
139	SD_XCAS	OUT	Debug SDRAM CAS 'L'
140	SD_XCS	OUT	Debug SDRAM Chip Select 'L'
141	CPU_D0	I/O	FLASH, Debug SDRAM/SRAM data
142	CPU_D1		
143	CPU_D2		
144	CPU_D3		
145	CPU_D4		
146	CPU_D5		
147	CPU_D6		
148	CPU_D7		
149	VDD_1V8	-	1.8 V Power supply
150	VSS	-	Ground
151	CPU_D8	I/O	FLASH, Debug SDRAM/SRAM data
152	CPU_D9		
153	CPU_D10		
154	CPU_D11		
155	CPU_D12		
156	CPU_D13		
157	CPU_D14		
158	CPU_D15		
159	VDD_3V3	-	3.3 V Power supply
160	VSS	-	Ground

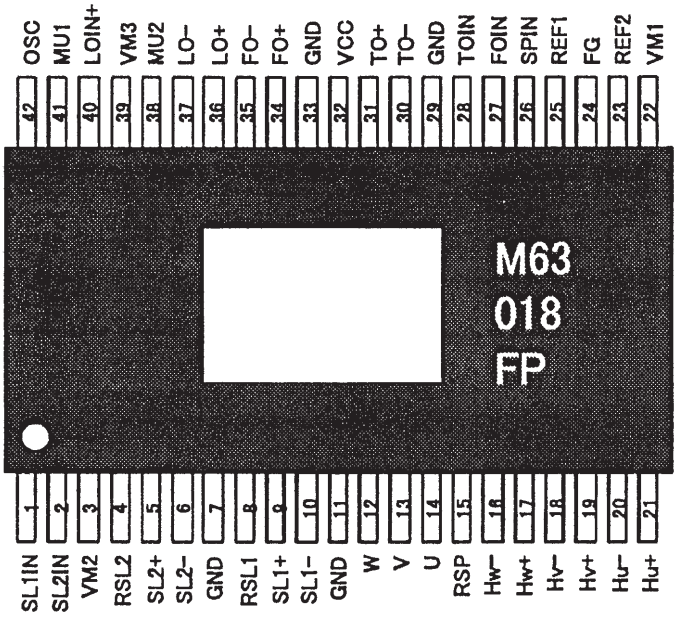
No.	Pin Name	Dir.	Pin Function
161	CPU_A1	OUT	FLASH, Debug SDRAM/SRAM Address
162	CPU_A2		
163	CPU_A3		
164	CPU_A4		
165	CPU_A5		
166	CPU_A6		
167	CPU_A7		
168	CPU_A8		
169	CPU_A9		
170	CPU_A10		
171	VDD_1V8	-	1.8 V Power supply
172	VSS	-	Ground
173	CPU_A11	OUT	FLASH, Debug SDRAM/SRAM Address
174	CPU_A12		
175	CPU_A13		
176	CPU_A14		
177	CPU_A15		
178	CPU_A16		
179	CPU_A17		
180	CPU_A18		
181	CPU_A19		
182	CPU_A20		
183	CPU_A21		
184	VDD_3V3	-	3.3 V Power supply
185	VSS	-	Ground
186	XEXPE	OUT	reserved
187	FE_ERROR	IN	Front-End L6316 stream interface. ECC Error flag
188	VSEL1	OUT	EURO(SCART) connector (BLINKING) output signal 'L' : RGB output disable 'H' : RGB output enable
189	VSEL2	OUT	EURO(SCART) connector V/Y, R/C signal. 'L' : VRGB output = YCGB 'H' : VRGB output = VRGB
190	FE_RST	OUT	Front-End L6316. Hardware reset output. 'L' : reset
191	SACD_XRST	OUT	Reset signal of SACD decoder. 'L' : reset
192	XMMUTE	OUT	Output for tone quality enhancement
193	B_SYNC	OUT	Sector synchronization output to SACD decoder
194	SDA	I/O	Front-End L6316 command interface I2C bus serial data line.
195	SCL	OUT	Front-End L6316 command interface I2C bus serial clock line.
196	B_WCLK	OUT	Word clock output to SACD decoder
197	TXD	OUT	UART(RS-232C) data output
198	VDD_1V8		1.8 V Power supply
199	VSS	-	Ground
200	RXD	IN	UART(RS-232C) data input

No.	Pin Name	Dir.	Pin Function
201	XAMUTE	OUT	Output signal for analog audio output line muting. 'L' : muting
202	TRIGIN	IN	Diagnostic Control Unit interface
203	TRIGOUT	OUT	Diagnostic Control Unit interface
204	DAC_XCS0	OUT	Chip enable for audio DAC serial control. 'L' : enable
205	DAC_XCS1	OUT	Use of serial control of 5.1ch audio DAC is possible. 'L' : enable
206	FP_ACK	OUT	Front Panel / DAC interface. Hand-shake (acknowledge) output 'H'.
207	FP_SCK	OUT	Front Panel / DAC interface. Serial transfer clock output.
208	FP_SI	IN	Front Panel interface. Serial transfer data input.

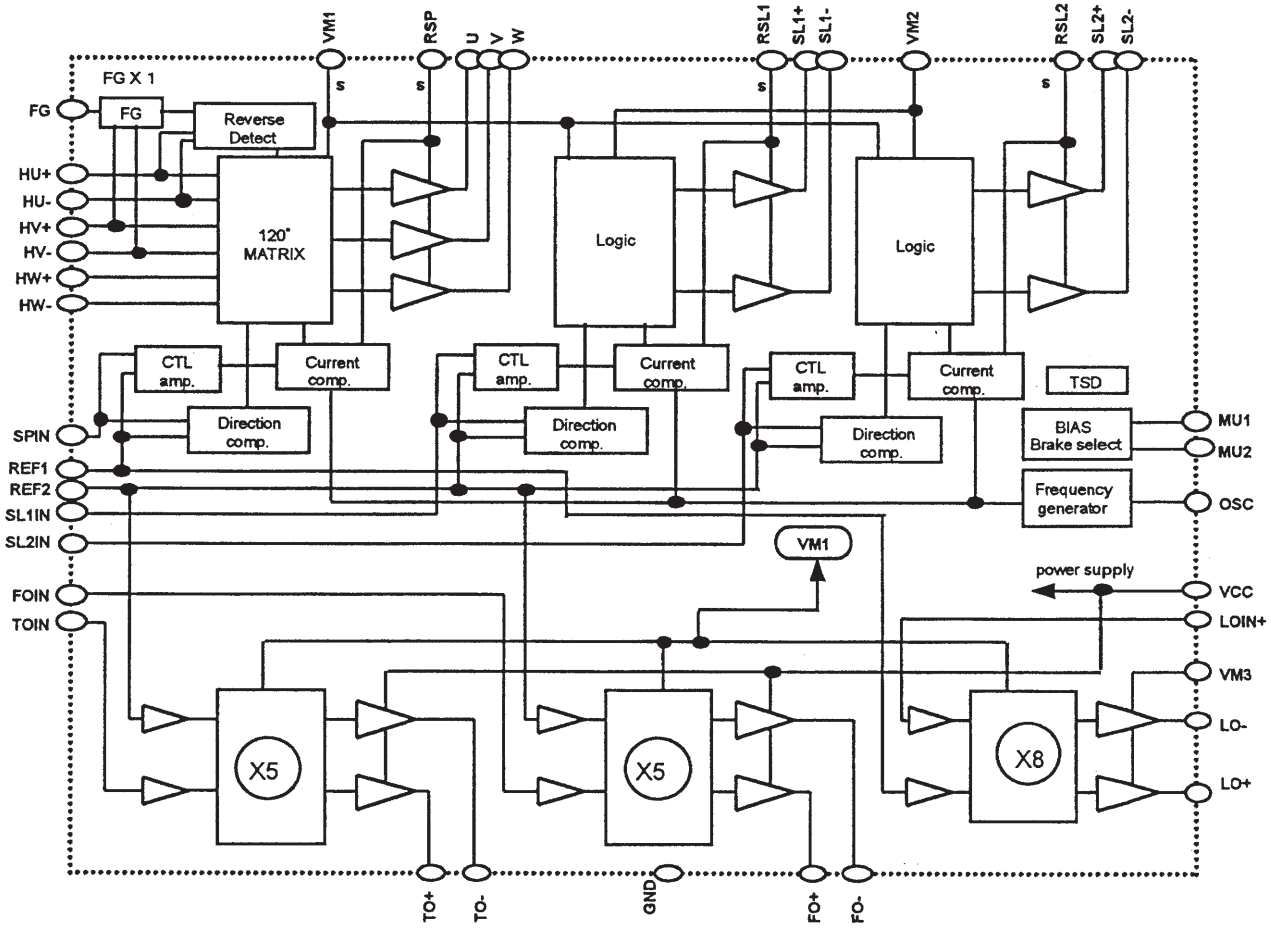
■ M63018FP (DVDM ASSY : IC101)

• FTS Driver IC

● Pin Arrangement



● Block Diagram



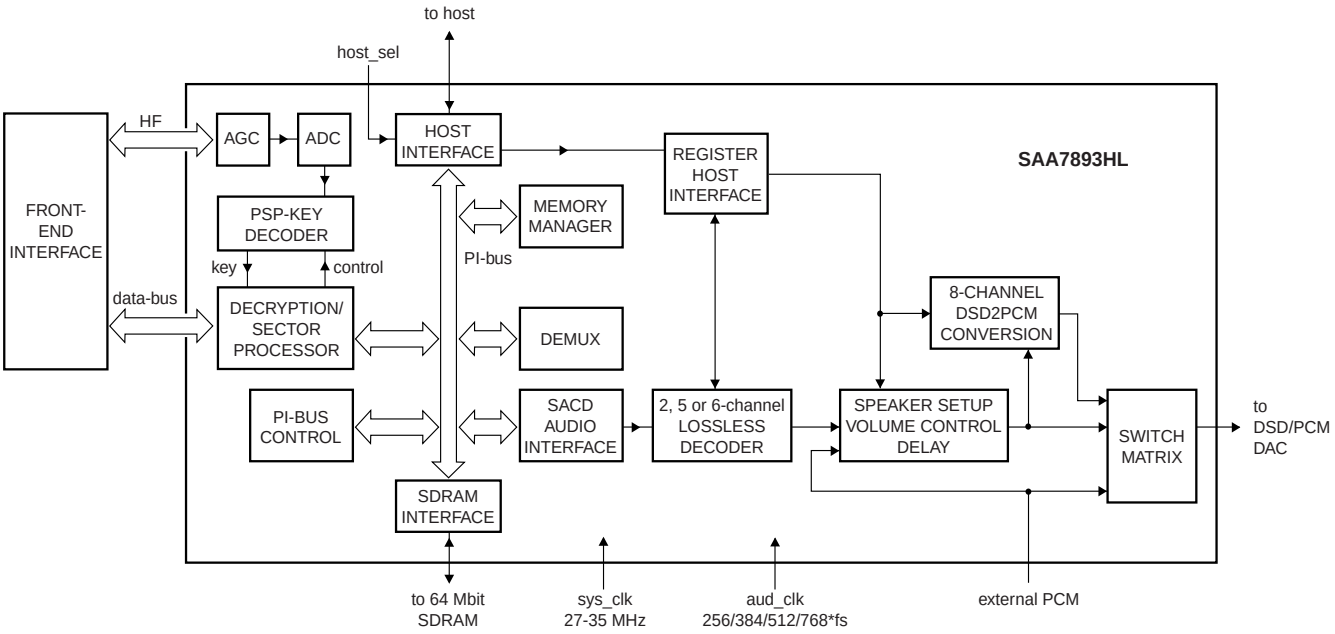
● **Pin Function**

TERMINAL	SYMBOL	TERMINAL FUNCTION	TERMINAL	SYMBOL	TERMINAL FUNCTION
1	SL1IN	Slide control voltage input 1	42	OSC	PWM carrier oscillation set
2	SL2IN	Slide control voltage input 2	41	MU1	mute / brake select terminal 1
3	VM2	Motor Power Supply 2 (for Slide)	40	LOIN+	Loading control input(+)
4	RSL2	Slide current sense 2	39	VM3	Power Supply3 (for Loading)
5	SL2+	Slide non-inverted output 2	38	MU2	mute / brake select terminal 2
6	SL2-	Slide inverted output 2	37	LO-	Loading inverted output
7	GND	GND	36	LO+	Loading non-inverted output
8	RSL1	Slide current sense 1	35	FO-	Focus inverted output
9	SL1+	Slide non-inverted output 1	34	FO+	Focus non-inverted output
10	SL1-	Slide inverted output 1	33	GND	GND
11	GND	GND	32	VCC	Power Supply (for FS ,TS)
12	W	Motor drive output W	31	TO+	Tracking non-inverted output
13	V	Motor drive output V	30	TO-	Tracking inverted output
14	U	Motor drive output U	29	GND	GND
15	RSP	Spindle current sense	28	TOIN	Tracking control voltage input
16	HW-	HW- sensor amp. input	27	FOIN	Focus control voltage input
17	HW+	HW+ sensor amp. input	26	SPIN	Spindle control voltage input
18	HV-	HV- sensor amp. input	25	REF1	Reference voltage input 1 (for Spindle,Loading)
19	HV+	HV+ sensor amp. input	24	FG	Frequency generator output
20	HU-	HU- sensor amp. input	23	REF2	Reference voltage input 2 (for Slide,Focus,Tracking)
21	HU+	HU+ sensor amp. input	22	VM1	Motor Power Supply 1 (for Spindle)

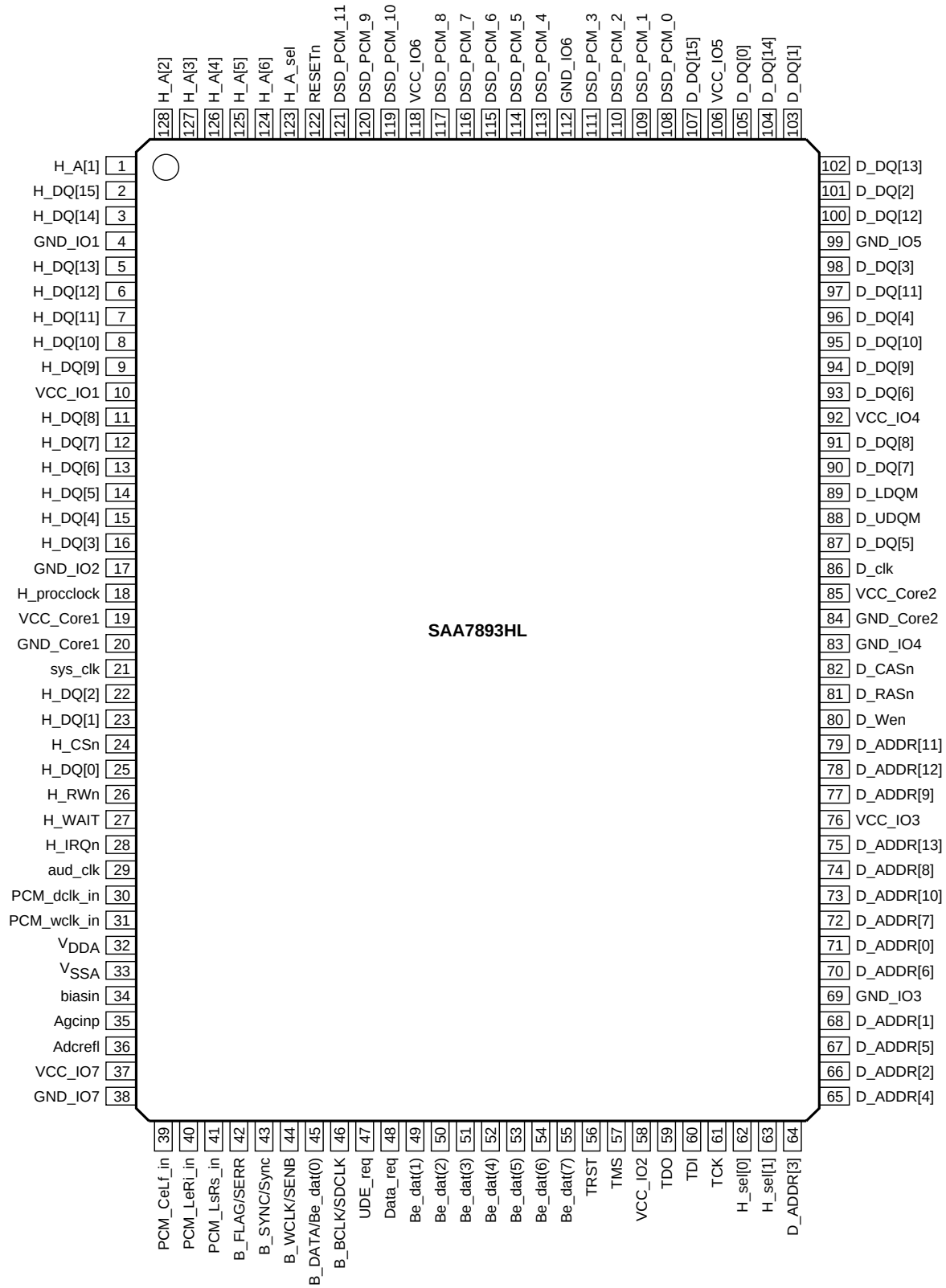
■ SAA7893HL/C2 (DVDM ASSY : IC801)

• SACD Decoder IC

● Block Diagram



● Pin Layout


SAA7893HL
1 H_A[1]
2 H_DQ[15]
3 H_DQ[14]
4 GND_IO1
5 H_DQ[13]
6 H_DQ[12]
7 H_DQ[11]
8 H_DQ[10]
9 H_DQ[9]
10 VCC_IO1
11 H_DQ[8]
12 H_DQ[7]
13 H_DQ[6]
14 H_DQ[5]
15 H_DQ[4]
16 H_DQ[3]
17 GND_IO2
18 H_procclock
19 VCC_Core1
20 GND_Core1
21 sys_clk
22 H_DQ[2]
23 H_DQ[1]
24 H_CSn
25 H_DQ[0]
26 H_RWn
27 H_WAIT
28 H_IRQn
29 aud_clk
30 PCM_dclk_in
31 PCM_wclk_in
32 VDDA
33 VSSA
34 biasin
35 Agcinp
36 Adcrefl
37 VCC_IO7
38 GND_IO7
39 PCM_CeLf_in
40 PCM_LeRi_in
41 PCM_LsRs_in
42 B_FLAG/SERR
43 B_SYNC/Sync
44 B_WCLK/SENB
45 B_DATA/Be_dat(0)
46 B_BCLK/SDCLK
47 UDE_req
48 Data_req
49 Be_dat(1)
50 Be_dat(2)
51 Be_dat(3)
52 Be_dat(4)
53 Be_dat(5)
54 Be_dat(6)
55 Be_dat(7)
56 TRST
57 TMS
58 VCC_IO2
59 TDO
60 TDI
61 TCK
62 H_sel[0]
63 H_sel[1]
64 D_ADDR[3]
65 D_ADDR[4]
66 D_ADDR[2]
67 D_ADDR[5]
68 D_ADDR[1]
69 GND_IO3
70 D_ADDR[6]
71 D_ADDR[0]
72 D_ADDR[7]
73 D_ADDR[10]
74 D_ADDR[8]
75 D_ADDR[13]
76 VCC_IO3
77 D_ADDR[9]
78 D_ADDR[12]
79 D_ADDR[11]
80 D_Wen
81 D_RASn
82 D_CASn
83 GND_IO4
84 GND_Core2
85 VCC_Core2
86 D_clk
87 D_DQ[5]
88 D_UDQM
89 D_LDQM
90 D_DQ[7]
91 D_DQ[8]
92 VCC_IO4
93 D_DQ[6]
94 D_DQ[9]
95 D_DQ[10]
96 D_DQ[4]
97 D_DQ[11]
98 D_DQ[3]
99 GND_IO5
100 D_DQ[12]
101 D_DQ[2]
102 D_DQ[13]
103 D_DQ[1]
104 D_DQ[14]
105 D_DQ[0]
106 VCC_IO5
107 D_DQ[15]
108 DSD_PCM_0
109 DSD_PCM_1
110 DSD_PCM_2
111 DSD_PCM_3
112 GND_IO6
113 DSD_PCM_4
114 DSD_PCM_5
115 DSD_PCM_6
116 DSD_PCM_7
117 DSD_PCM_8
118 VCC_IO6
119 DSD_PCM_10
120 DSD_PCM_9
121 DSD_PCM_11
122 RESETn
123 H_A_sel
124 H_A[6]
125 H_A[5]
126 H_A[4]
127 H_A[3]
128 H_A[2]

● Pin Function

Symbol	Pin	Type[1]	Description
H_A[1]	1	IN	address bus
H_DQ[15]	2	I/O10	data bus
H_DQ[14]	3	I/O10	data bus
GND_IO1	4	GND_IO	GND I/O pads
H_DQ[13]	5	I/O10	data bus
H_DQ[12]	6	I/O10	data bus
H_DQ[11]	7	I/O10	data bus
H_DQ[10]	8	I/O10	data bus
H_DQ[9]	9	I/O10	data bus
VCC_IO1	10	VCC_IO	V_{CC} I/O pads
H_DQ[8]	11	I/O10	data bus
H_DQ[7]	12	I/O10	data bus
H_DQ[6]	13	I/O10	data bus
H_DQ[5]	14	I/O10	data bus
H_DQ[4]	15	I/O10	data bus
H_DQ[3]	16	I/O10	data bus
GND_IO2	17	GND_IO	GND I/O pads
H_procclock	18	IN	host processor EMI interface clock
VCC_Core1	19	VCC_core	core supply voltage
GND_Core1	20	GND_core	core ground
sys_clk	21	IN	system clock
H_DQ[2]	22	I/O10	data bus
H_DQ[1]	23	I/O10	data bus
H_CSn	24	IN	host chip select; active LOW
H_DQ[0]	25	I/O10	data bus
H_RWn	26	IN	read = 1; write = 0
H_WAIT	27	O10	wait signal
H_IRQn	28	O10	interrupt request; active LOW
aud_clk	29	IN	DSD audio clock
PCM_dclk_in	30	IN	PCM data clock
PCM_wclk_in	31	IN	PCM word clock
V_{DDA}	32	VDDCO	V_{DD} of ADC
V_{SSA}	33	VSSCO	V_{SS} of AGC and ADC; connected to substrate
biasin	34	APIO	bias current input
Agcinp	35	APIO	AGC positive input signal; HF in
Adcrefl	36	APIO	ADC decoupling
VCC_IO7	37	VCC_IO	V_{CC} I/O pads
GND_IO7	38	GND_IO	GND I/O pads
PCM_CeLf_in	39	IN	PCM data center or LFE

Symbol	Pin	Type[1]	Description
PCM_LeRi_in	40	IN	PCM data left or right
PCM_LsRs_in	41	IN	PCM data left or right surround
B_FLAG/SERR	42	IN	I^2S-bus flag (EDC flag)
B_SYNC/Sync	43	IN	sector sync or absolute time sync
B_WCLK/SENB	44	IN	I^2S-bus word clock or UDE data sense from host
B_DATA/Be_dat(0)	45	IN	I^2S-bus data or LSB data of parallel interface
B_BCLK/SDCLK	46	IN	I^2S-bus bit clock
UDE_req	47	IN	host request data from front-end; routed via the SAA7893HL
Data_req	48	O10	data request for UDE
Be_dat(1)	49	IN	front-end parallel data interface
Be_dat(2)	50	IN	front-end parallel data interface
Be_dat(3)	51	IN	front-end parallel data interface
Be_dat(4)	52	IN	front-end parallel data interface
Be_dat(5)	53	IN	front-end parallel data interface
Be_dat(6)	54	IN	front-end parallel data interface
Be_dat(7)	55	IN	front-end parallel data interface
TRST	56	IN1	boundary scan reset
TMS	57	IN1	boundary scan mode select
VCC_IO2	58	VCC_IO	V_{CC} I/O pads
TDO	59	O10	output
TDI	60	IN1	boundary scan data input
TCK	61	IN	boundary scan clock
H_sel[0]	62	IN	host select signals: SAD16, MAD16 and SAD08
H_sel[1]	63	IN	host select signals: SAD16, MAD16 and SAD08
D_ADDR[3]	64	O10	SDRAM address bus
D_ADDR[4]	65	O10	SDRAM address bus
D_ADDR[2]	66	O10	SDRAM address bus
D_ADDR[5]	67	O10	SDRAM address bus
D_ADDR[1]	68	O10	SDRAM address bus
GND_IO3	69	GND_IO	GND I/O pads
D_ADDR[6]	70	O10	SDRAM address bus
D_ADDR[0]	71	O10	SDRAM address bus
D_ADDR[7]	72	O10	SDRAM address bus
D_ADDR[10]	73	O10	SDRAM address bus
D_ADDR[8]	74	O10	SDRAM address bus
D_ADDR[13]	75	O10	SDRAM address bus
VCC_IO3	76	VCC_IO	V_{CC} I/O pads
D_ADDR[9]	77	O10	SDRAM address bus

Symbol	Pin	Type[1]	Description
D_ADDR[12]	78	O10	SDRAM address bus
D_ADDR[11]	79	O10	SDRAM address bus
D_Wen	80	O10	read or write
D_RASn	81	O10	row address select; active LOW
D_CASn	82	O10	column address select; active LOW
GND_IO4	83	GND_IO	GND I/O pads
GND_Core2	84	GND_core	core ground
VCC_Core2	85	VCC_core	core supply voltage
D_clk	86	O10	clock signal needed for SDRAM
D_DQ[5]	87	I/O10	data bus
D_UDQM	88	O10	DQ mask enable (upper)
D_LDQM	89	O10	DQ mask enable (lower)
D_DQ[7]	90	I/O10	data bus
D_DQ[8]	91	I/O10	data bus
VCC_IO4	92	VCC_IO	V_{CC} I/O pads
D_DQ[6]	93	I/O10	data bus
D_DQ[9]	94	I/O10	data bus
D_DQ[10]	95	I/O10	data bus
D_DQ[4]	96	I/O10	data bus
D_DQ[11]	97	I/O10	data bus
D_DQ[3]	98	I/O10	data bus
GND_IO5	99	GND_IO	GND I/O pads
D_DQ[12]	100	I/O10	data bus
D_DQ[2]	101	I/O10	data bus
D_DQ[13]	102	I/O10	data bus
D_DQ[1]	103	I/O10	data bus
D_DQ[14]	104	I/O10	data bus
D_DQ[0]	105	I/O10	data bus
VCC_IO5	106	VCC_IO	V_{CC} I/O pads
D_DQ[15]	107	I/O10	data bus
DSD_PCM_0	108	O10	6-channel data output
DSD_PCM_1	109	O10	6-channel data output
DSD_PCM_2	110	O10	6-channel data output
DSD_PCM_3	111	O10	6-channel data output
GND_IO6	112	GND_IO	GND I/O pads
DSD_PCM_4	113	O10	6-channel data output
DSD_PCM_5	114	O10	6-channel data output
DSD_PCM_6	115	O10	6-channel clock/control
DSD_PCM_7	116	O10	6-channel clock/control
DSD_PCM_8	117	O10	2-channel clock/control
VCC_IO6	118	VCC_IO	V_{CC} I/O pads

Symbol	Pin	Type[1]	Description
DSD_PCM_10	119	O10	2-channel data output
DSD_PCM_9	120	O10	2-channel clock or control
DSD_PCM_11	121	O10	2-channel data output
RESETn	122	IN	asynchronous reset; active LOW
H_A_sel	123	IN	address select
H_A[6]	124	IN	address bus
H_A[5]	125	IN	address bus
H_A[4]	126	IN	address bus
H_A[3]	127	IN	address bus
H_A[2]	128	IN	address bus

[1] Explanation of input and output ports:
IN: digital input port; all dedicated inputs are TTL tolerant.
IN1: digital input port with internal pull-up resistor.
I/O10: bidirectional port with 10 ns slew rate.
O10: 3-state (in test mode) output port with 10 ns slew rate.
APIO: analog input port.
VDDCO: analog V_{DD} port (1.8 V).
VSSCO: analog V_{SS} port.
GND_IO: ground for I/O pads.
VCC_IO: V_{CC} for I/O pads (3.3 V).
GND_core: ground for core.
VCC_core: V_{CC} for core (1.8 V).

■ PDC110B (CONTROL ASSY : IC5501)

• System Control Microcomputer

● Pin Functions

No.	Mark	Pin Name	I/O	Function
1	PA3/WR#	DVDON/OFF	O	Control power supply for DVD module
2	PA4/RD#	HPDET	I	Detect to insert headphone
3	PA5/RS	NC	O	NC
4	P70 / INT0 / T0LCP / AN8	ACPULSE	I	AC PULSE input (Interruption)
5	P71 / INT1 / T0HCP / AN9	NC	O	NC
6	P72 / INT2 / T0IN	RDSCLK	I (O)	Clock input from RDS decoder (without RDS : Low output)
7	P73 / INT3 / T0IN	REMOCON	I	REMOCON signal input (Interruption)
8	RES#	XRESET	I	μ-com reset input
9	XT1 / AN10	XT1	–	(When this port don't use , please connect VDD)
10	XT2 / AN11	XT2	–	(When this port don't use , please set open)
11	VSS1	VSS1	–	GND
12	CF1	CF1	–	for OSC
13	CF2	CF2	–	for OSC
14	VDD1	VDD1	–	VDD
15	P80 / AN0	SIMUKE	I	Destination distinction input
16	P81 / AN1	MODEL	I	model distinction input
17	P82 / AN2	VDET	I	DVD 3.3V detection input
18	P83 / AN3	KEY1	I	Key1 input
19	P84 / AN4	NC	O	NC
20	P85 / AN5	NC	O	NC
21	P86 / AN6	ST/TUNE	I	STEREO tuned detection input
22	P87 / AN7	XPROTECT	I	Protection and Fan Error detection input
23	P10/SO0	SDATA	O	System bus data output (AMP side output)
24	P11 / SI0 / SB0	MDATA	I	System bus data input (AMP side input)
25	P12 / SCK0	SCLK	I	System bus clock input
26	P13 / SO1	DSPDI	O	Data output to DSP (MOTOROLA) and DIR
27	P14 / SI1 / SB1	DSPDO	I	Data input from DSP (MOTOROLA)
28	P15 / SCK1	DSPCK	O	Clock output to DSP (MOTOROLA) and DIR
29	P16/T1PWML	SYSCS2	O	Chip select 2 for system bus
30	P17/T1PWMH/BUZ	SYSCS1	O	Chip select 1 for system bus
31	PE0	XHPMUTE	O	HP MUTE ON/OFF
32	PE1	XRECMUTE	O	REC OUTPUT MUTE ON/OFF
33	PE2	NC	O	NC
34	PE3	NC	O	NC
35	PE4	NC	O	NC
36	PE5	NC	O	NC
37	PE6	TIMERLED	O	Control TIMER LED
38	PE7	(LEVELSHIFT)	O	VOL 0 to 5 : H (standby)
39	VSS4	VSS4	–	GND
40	VDD4	VDD4	–	VDD

No.	Mark	Pin Name	I/O	Function
41	PF0	ATT10dB	O	Control ATT 10dB
42	PF1	ATT6dB	O	Control ATT 6dB
43	PF2	STEST	I	Set SERVICE TEST MODE for Service
44	PF3	UTEST	I	Set UNIT CHECK for checker
45	PF4	DTSDMIX	O	Cntrol of gain-up for dts down-mix
46	PF5	SWFMIX	O	Control for subwoofer mix
47	PF6	DIMSEL1	O	DIMMER SELECT1
48	PF7	DIMSEL2	O	DIMMER SELECT2
49	SI2P0/SO2	LCDDAT	O	Data for LCD driver
50	SI2P1/SI2/SB2	LCDCS	O	Chip enable for LCD driver
51	SI2P2/SCK2	LCDCLK	O	Clock for LCD driver
52	SI2P3/SCK20	(XLCDRST)	O	Reset for LCD driver (standby)
53	PWM1	NC		NC
54	PWM0	NC		NC
55	VDD2	VDD2	–	VDD
56	VSS2	VSS2	–	GND
57	P00	TXCE	O	Chip enable for tuner LSI
58	P01	NC	O	NC
59	P02	DIGSEL	O	SW for Digital 1/2 select
60	P03	WVOLCE	O	Chip enable for woreless-vol IC
61	P04	TXCLK	O	Clock for tuner LSI
62	P05	TXODATA	O	Data for tuner LSI
63	P06	TXMUTE	O	Control mute of tuner
64	P07	RDSPOW	O	Control power supply of RDS (L : POWER ON)
65	P20/INT4/T1IN	RDSDATA	I (O)	Input RDS data
66	P21/INT4/T1IN	TXIDATA	I	Input data from tuner LSI
67	P22/INT4/T1IN	DVDACK	I	Ackknowlegement from DVD MODULE (Interruption)
68	P23/INT4/T1IN	XVMUTE	O	VIDEO MUTE request to DVD MODULE
69	P24/INT5/T1IN	DVDMUTE	I	Request of MUTE from DVD MODULE (Interruption)
70	P25/INT5/T1IN	AUDIOSELA	O	SW for Audio in DVD-A and SA-CD
71	P26/INT5/T1IN	INPUTSELC	O	AUDIO INPUT SELECT C (or TV AUDIO INPUT SELECT)
72	P27/INT5/T1IN	XWMUTE	O	WIRE LESS MUTE request
73	P30	WSELA	O	WIRE LESS OUTPUT SELECT A
74	P31	INPUTSELB	O	AUDIO INPUT SELECT B
75	P32	INPUTSELA	O	AUDIO INPUT SELECT A
76	P33	XTL0	O	Selection X'tal to DIR
77	P34	DIRERR	I	LOCK/UNLOCK from DIR
78	P35	DIRRST	O	Reset to DIR
79	P36	DIRCS	O	Chip select to DIR
80	PB7/D7	DIRDO	I	Data input from DIR

No.	Mark	Pin Name	I/O	Function
81	PB6/D6	DSPMODE	O	MODE selection (ROM/RAM) to DSP (MOTOROLA)
82	PB5/D5	DSPHREQ	I	Error detection from DSP (MOTOROLA)
83	PB4/D4	HPVOLCE	O	Chip enable for HP-vol IC
84	PB3/D3	DSPSS	O	Slave selection to DSP (MOTOROLA)
85	PB2/D2	XDSPRST	O	RESET to DSP (MOTOROLA) MODULE
86	PB1/D1	DECMUTE	I	Detection of 1st DSP boot success from DSP MODULE
87	PB0/D0	XDSPMUTE	O	MUTE requeat to DSP MODULE
88	VSS3	VSS3	–	GND
89	VDD3	VDD3	–	VDD
90	PC7/A7	DVDA6dBATT	O	ATTENUATION(6dB) operating Bass/Treble at DVD-AUDIO
91	PC6/A6	SYSPOW	O	Control power supply of system
92	PC5/A5	XTVMUTE	O	Control muting of TV (EURO)
93	PC4/A4	XDVDRST	O	RESET to DVD MODULE
94	PC3/A3	XSYSMUTE	O	Control mute of system
95	PC2/A2	VOLCE	O	Chip enable for E-vol IC
96	PC1/A1	VOLCLK	O	Clock for E-vol IC / HP-vol IC / Wireless-vol IC
97	PC0/A0	VOLDATA	O	Data for E-vol IC / HP-vol IC / Wireless-vol IC
98	PA0/CS2#	FLASHE/D	–	for FLASH writing
99	PA1/CS1#	FLASHDO	–	for FLASH writing
100	PA2/CS0#	FLASHCLK	–	for FLASH writing

- Port0 (P00-P07) can be selected for input or output by each 4 bits (P00-P03,P04-P07). Set for input when reset. And it can be set C-MOS or Nch-OD by each 1 bit in option.
- Port1 (P10-P17) can be selected for input or output by each 1 bit. Set for input when reset. And it can be set C-MOS or Nch-OD by each 1bit in option.
- Port2 (P20-P27) can be selected for input or output by each 1 bit. Set for input when reset. And it can be set C-MOS or Nch-OD by each 1 bit in option.
- Port3 (P30-P36) can be selected for input or output by each 1 bit. Set for input when reset. And it can be set C-MOS or Nch-OD by each 1 bit in option.
- Port7 (P70-P73) can be selected for input or output by each 1 bit. Set for input when reset.
- Port8 (P80-P87) can be selected for input or output by each 1 bit. Set for input when reset.
- PortA (PA0-PA5) can be selected for input or output by each 1 bit. Set for input when reset. And it can be set C-MOS or Nch-OD by each 1 bit in option.
- PortB (PB0-PB7) can be selected for input or output by each 1 bit. Set for input when reset. And it can be set C-MOS or Nch-OD by each 1 bit in option.
- PortC (PC0-PC7) can be selected for input or output by each 1 bit. Set for input when reset. And it can be set C-MOS or Nch-OD by each 1 bit in option.
- PortE and PortF can be selected for input or output by each 2 bits.

7.3 DISC/CONTENT FORMAT

Disc / content format playback compatibility

General disc compatibility

This player was designed and engineered to be compatible with software bearing one or more of the following logos:

DVD-Audio DVD-Video DVD-R DVD-RW

COMPACT disc DIGITAL AUDIO
COMPACT disc DIGITAL VIDEO
COMPACT disc DIGITAL AUDIO Recordable
COMPACT disc DIGITAL AUDIO ReWritable

Audio CD Video CD CD-R CD-RW

Super Audio CD

Fujicolor CD

- KODAK Picture CD
- *is a trademark of Fuji Photo Film Co. Ltd.*

Other formats, including but not limited to the following, are not playable in this player:

DVD-RAM / DVD-ROM / CD-ROM*

* *Except those that contain MP3 or JPEG. See also "Compressed audio compatibility" and "JPEG file compatibility" below.*

DVD-R/RW and CD-R/RW discs (Audio CDs and Video CD/Super VCDs) recorded using a DVD recorder, CD recorder or personal computer may not be playable on this unit. This may be caused by a number of possibilities, including but not limited to: the type of disc used; the type of recording; damage, dirt or condensation on either the disc or the player's pick-up lens. See below for notes about particular software and formats.

CD-R/RW compatibility

- This unit will play CD-R and CD-RW discs recorded in CD Audio or Video CD/Super VCD format, or as a CD-ROM containing MP3 or JPEG files. However, any other content may cause the disc not to play, or create noise/distortion in the output.
- This unit cannot record CD-R or CD-RW discs.
- Unfinalized CD-R/RW discs recorded as CD Audio can be played, but the full Table of Contents (playing time, etc.) will not be displayed.

DVD-R/RW compatibility

- This unit will play DVD-R/RW discs recorded using the DVD-Video format that have been finalized using a DVD-recorder.
- This unit will play DVD-RW discs recorded using the Video Recording (VR) format.
- **DVD-RW** shows in the display when a VR format DVD-RW disc is loading.
- When playing a VR format DVD-RW discs that was edited on a DVD recorder, the screen may go momentarily black at edited points and/or you may see scenes from immediately before the edited point.
- This unit cannot record DVD-R/RW discs.
- Unfinalized DVD-R/RW discs cannot be played in this player.

PC-created disc compatibility

- If you record a disc using a personal computer, even if it is recorded in a "compatible format" as listed above, there will be cases in which the disc may not be playable in this machine due to the setting of the application software used to create the disc. In these particular instances, check with the software publisher for more detailed information.
- Check the DVD-R/RW or CD-R/RW software disc boxes for additional compatibility information.

Compressed audio compatibility

- This unit will play CD-ROM, CD-R, and CD-RW discs containing files saved in the MPEG-1 Audio Layer 3 (MP3) format with a sampling rate of 32, 44.1 or 48kHz. Incompatible files will not play and the message **Can't play this format** will be displayed (**NO PLAY** in the front panel display).
- Fixed bit-rate MP3 files are recommended. Variable bit-rate (VBR) MP3 files are playable, but playing time may not be shown correctly..
- The CD-ROM used to compile your MP3 files must be ISO 9660 Level 1 or 2 compliant. CD physical format: Mode1, Mode2 XA Form1. Romeo and Joliet file systems are both compatible with this player.
- Use CD-R or CD-RW media for recording your files. The disc must be finalized (i.e. the session must be closed) in order to play in this unit. This player is not compatible with multi-session discs. Only the first session of a multi-session disc will be recognized.
- This player only plays tracks that are named with the file extension .mp3 or .MP3.
- When naming MP3 files, add the corresponding file name extension (.mp3). Files are played according to the file extension. To prevent noise and malfunctions, do not use these extensions for other kinds of files.
- This player can recognize up to 999 files (MP3/JPEG) and up to 499 folders. If a disc exceeds these limits, only files and folders up to these limits will be playable. Files and folders are read/displayed in alphabetical order. Note that if the file structure is very complex, you may not be able to read/play all files on the disc.
- Folder and track names (excluding the file extension) are displayed.
- There are many different recording bit-rates available to encode MP3 files. This unit was designed to be compatible with all of them. Audio encoded at 128Kbps should sound close to regular CD Audio quality. This player will play lower bit-rate files, but please note that the sound quality becomes noticeably worse at lower bit-rates.

JPEG file compatibility

- Baseline JPEG and EXIF 2.1* still image files up to 8 mega-pixels are supported (maximum vertical and horizontal resolution is 5120 pixels). (**File format used by digital still cameras*)
- The CD-ROM used to compile your JPEG files must be ISO 9660 Level 1 or 2 compliant. CD physical format: Mode1, Mode2 XA Form1. Romeo and Joliet file systems are both compatible with this player.
- This player only displays files that are named with the file extension .jpg or .JPG.

7.4 CLEANING

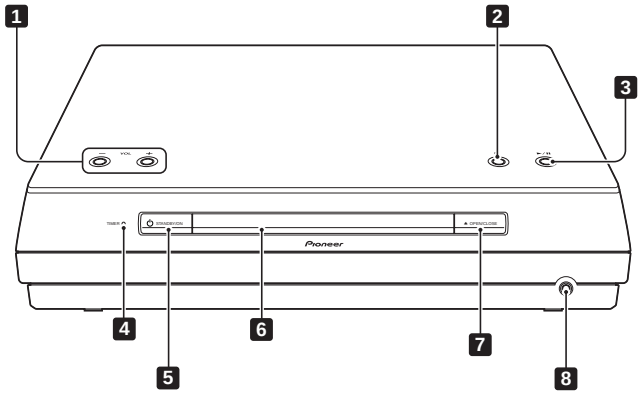
Before shipping out the product, be sure to clean the following positions by using the prescribed cleaning tools:

Position to be cleaned	Cleaning tools
Pickup lenses	Cleaning liquid : GEM1004 Cleaning paper : GED-008

Position to be cleaned	Cleaning tools
Fans	Cleaning paper : GED-008

8. PANEL FACILITIES
8.1 PANEL FACILITIES

Front panel



1 VOLUME buttons
Use to adjust the volume.

2 ■
Press to stop playback.

3 ▶/II
Press to switch to the **DVD/CD** function. Also press to start/pause/resume playback.

4 Timer indicator
Lights when the wake-up timeris set.

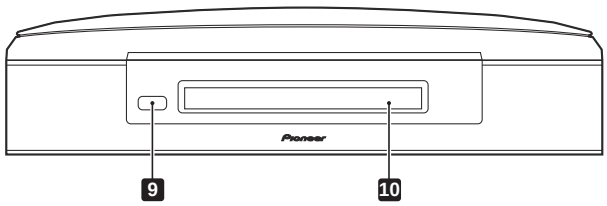
5 ⏻ STANDBY/ON
Press to switch the system on or into standby.

6 Disc tray

7 ⏏ OPEN/CLOSE
Press to open/close the disc tray.

8 PHONES jack
Headphone jack.

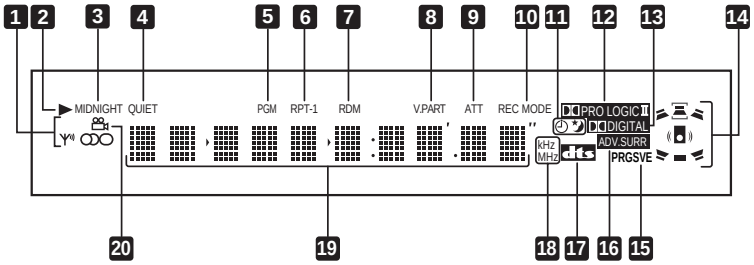
Display unit



9 Remote sensor

10 Display
See Display on next page for detailed information.

Display



1 Tuner indicators

Lights when in one of the RDS display or search modes.

Lights when a broadcast is being received.

Lights when a stereo FM broadcast is being received in auto stereo mode.

Lights when FM mono reception is selected.

2 ►
Lights when a disc is playing.

3 MIDNIGHT
Lights when the Midnight mode is selected.

4 QUIET
Lights when the Quiet mode is selected**.**

5 PGM
Lights when a program list has been programmed.

6 RPT and RPT-1
RPTlights during repeat play. **RPT-1**lights during repeat one-track play.

7 RDM
Lights during random play.

8 V.PART
Light when playing a video part of a DVD disc.

9 ATT
Lights when the input attenuator is active for the currently selected analog input.

10 REC MODE
Lights when Rec Mode is active.

11 Timer indicators

Lights when the wake-up timer is set.

Lights when the sleep timer is active.

12 PRO LOGIC II
Lights during Dolby Pro Logic decoding.

13 DIGITAL
Lights during playback of a Dolby Digital source.

14 Speaker indicators
These show which speakers are being used to output the current source. The illustrations below show some example displays.

5.1 channel surround sound

Stereo (2.1 channel) sound

3.1 channel sound with Dialogue enhancement on the center channel

5.1 channel surround sound with Virtual Surround Back mode active

15 PRGSVE
Lights when progressive scan video output is selected.

16 ADV.SURR.
Lights when one of the Advanced Surround listening modes is selected.

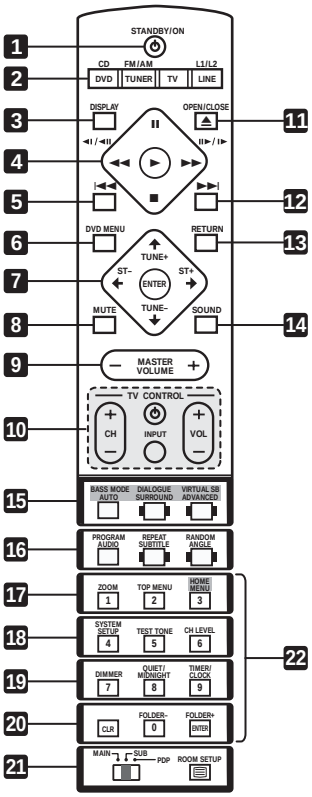
17 DTS
Lights during playback of a DTS source.

18 kHz / MHz
Indicates the unit of the frequency shown in the character display (**kHz** for AM, **MHz** for FM).

19 Character display

20
Lights during multi-angle scenes on a DVD disc.

Remote control



Important

- Functions printed in green on the remote control are accessed by switching the **MAIN**/**SUB**/**PDP** switch to **SUB**.

1 ⏻ STANDBY/ON
Press to switch the system on or into standby.

2 Function select buttons
Press to select the source you want to listen to (**DVD (CD)**. **TUNER**,**TV**, **LINE**)

3 DISPLAY
Press to display/change disc information shown on-screen.

4 Disc playback controls

►
Press to start or resume playback.

◄◄ and ◄I /◄II
Use for reverse slow motion playback, frame reverse and reverse scanning.

►► and II►/ I►
Use for forward slow motion playback, frame advance and forward scanning.

II
Press to pause playback; press again to restart.

■
Press to stop playback.

5 I◄◄
Press to jump to the beginning of the current chapter/track, then to previous chapters/ tracks.

6 DVD MENU
Press to display a DVD disc menu, or the Disc Navigator if a VR format DVD-RW, CD, Video CD, MP3 or JPEG disc is loaded.

7 Cursor buttons, ENTER and tuning buttons

Cursor buttons
Use the cursor buttons (↑ / ↓ / ← / →) to navigate on-screen displays and menus.

ENTER
Press to select an option or execute a command.

TUNE +/–
Use to tune the radio.

ST +/–
Use to select station presets when listening to the radio.

8 MUTE

Press to mute all sound from the speakers and headphones (press again to cancel).

9 MASTER VOLUME

Use to adjust the volume.

10 TV CONTROL

⏻

Press to switch the TV on or into standby.

INPUT

Press to switch the TV input.

P +/–

Use to select channels on the TV.

VOL +/–

Use to adjust the volume on the TV.

11 ⏏ OPEN/CLOSE

Press to open/close the disc tray.

12 ►►|

Press to jump to the next chapter/track.

13 RETURN

Press to return to a previous menu screen.

14 SOUND

Press to access the sound menu, from which you can adjust the DSP effect level, bass and treble, etc.

15 Surround sound mode/sound enhancement buttons

(In MAIN)

AUTO

Press to select the default decoding for the current source.

SURROUND

Use to select a Surround mode.

ADVANCED

Use to select an Advanced Surround.

(In SUB)

BASS MODE

Use to select a Bass Mode.

DIALOGUE

Use to select a Dialogue mode.

VIRTUAL SB

Press to switch the Virtual Surround Back speaker effect on/off.

16 DVD/CD buttons

(In MAIN)

AUDIO

Press to select an audio channel or language.

SUBTITLE

Press to display/change the DVD subtitle display.

ANGLE

Press to change camera angle during DVD multi-angle scene playback.

(In SUB)

PROGRAM

Use to program/play a program list.

REPEAT

Use to select a repeat play mode.

RANDOM

Use to select a random play mode.

17 (In SUB)

ZOOM

Press to change the screen zoom level.

TOP MENU

Use to display the top menu of a DVD disc in the play position (this may be the same as pressing **DVD MENU**).

HOME MENU
Press to display (or exit) the on-screen menu for Initial Settings, Play Mode functions, etc.

18 (In SUB)

SYSTEM SETUP
Use to make various system and surround sound settings.

TEST TONE
Use to output the test tone (for speaker setup).

CH LEVEL
Use to adjust the speaker level.

19 (In SUB)

DIMMER
Press to dim or brighten the display.

QUIET/MIDNIGHT
Use to select the Quiet and Midnight modes.

TIMER/CLOCK
Press to display the clock and to access the timer menu.

20 (In MAIN)

CLR
Press to clear an entry.

ENTER
Selects menu options, etc. (works exactly the same as the **ENTER** button in **7** above).

(In SUB)

FOLDER –
Press to jump to previous folders.

FOLDER +
Press to jump to the next folder.

21 MAIN / SUB / PDP
Change from **MAIN** to **SUB** to access functions printed in green. Switch to **PDP** to be able to use teletext with Pioneer plasma displays (see Teletext on/off below)

(In MAIN)

ROOM SETUP
Press to start Room Setup.

(In PDP)

(Teletext on/off)
Press to display/hide the teletext screen. (Use the number buttons and the blue, green, yellow and red buttons to navigate teletext screens when using with a Pioneer plasma display.)

22 (In MAIN)

Number buttons
Use the number buttons for selecting titles/chapters/tracks from a disc directly.